VALIDITY AND RELIABILITY OF THE MALAY VERSIONS OF THE POSTTRAUMATIC GROWTH INVENTORY-SHORT FORM, HOPE SCALE, LIFE ORIENTATION TEST-REVISED AND SOURCE OF SOCIAL SUPPORT SCALE IN CANCER PATIENTS

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by

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TABLE OF CONTENTS

ACKNOWLEDGEMENT ..... **ii**

TABLE OF CONTENTS ..... **iii**

LIST OF TABLES ..... **ix**

LIST OF FIGURES ..... **xi**

LIST OF SYMBOLS ..... **xiii**

LIST OF ABBREVIATIONS ..... **xiv**

ABSTRAK ..... **xvii**

ABSTRACT ..... **xix**

CHAPTER 1 INTRODUCTION **1**

1.1 What is cancer and why is it important? 1

1.2 Objectives of the study 3

1.2.1 General objective 3

1.2.2 Specific objectives 3

1.2.2(a) Objective 1 3

1.2.2(b) Objective 2 3

1.2.2(c) Objective 3 3

CHAPTER 2 LITERATURE REVIEW **4**

2.1 Introduction 4

2.1.1 Posttraumatic growth in cancer patients. 5

2.1.2 Hope in cancer patients. 6

2.1.3 Optimism in cancer patients. 8

2.1.4 Social support in cancer patients. 9

2.2 Measures of positive psychology. 11

2.2.1 Instruments measuring posttraumatic growth in cancer patients. . 11

2.2.2 Instruments measuring hope in cancer patients. 12

2.2.3 Instruments measuring optimism in cancer patients. 13

2.2.4 Instruments measuring perceived spousal support in cancer patients. 14

2.3 Justification of the study. 15

CHAPTER 3 METHODOLOGY 17

3.1 Study Setting 17

3.2 Study Design. 17

3.3 Ethical Issues. 17

3.4 Study Population. 18

3.5 Sampling Method 18

3.6 Sample Size 19

3.7 Method and Tools 21

3.7.1 Participants recruitment. 21

3.7.2 Data collection 22

3.7.3 Instruments used. 23

3.7.3(a) Socio- demographic & clinical factors questionnaires. . 23

3.7.3(b) Hope Scale (HS) 24

3.7.3(c) Posttraumatic Growth Inventory-Short Form (PTGI-SF). 25

3.7.3(d) Life Orientation Scale-Revised (LOT-R). 26

3.7.3(e) Source of Social Support Scale (SSSS) 26

3.7.4 Translation of the PTGI-SF, SSSS, LOT-r and HS. 28

3.8 Data Analysis. 30

CHAPTER 4 RESULTS 32

4.1 Sociodemographic Data. 32

4.1.1 Total number of participants. 33

4.1.2 Age of the participants. 34

4.1.3 Gender of the participants. 35

4.1.4 Race. 36

4.1.5 Religion. 37

4.1.6 Income. 38

4.1.7 Marital status. 39

4.1.8 Education level. 40

4.2 Clinical data. 41

4.2.1 Cancer diagnosis. 42

4.2.2 Duration of cancer. 43

4.2.3 Stage of cancer 44

4.2.4 Treatment of patients during baseline assessment. 45

4.2.5 Treatment of patients during follow up 46

4.3 Descriptive statistical analysis 47

4.3.1 Pilot study 47

4.3.2 Mean and Standard Deviation. 48

4.3.2(a) Hope Scale (Malay) 48

4.3.2(b) LOT-R (Malay) 49

4.3.2(c) PTGI-SF (Malay) 50

4.3.2(d) SSSS (Malay) 51

4.4 Reliability of the PTGI-SF (Malay), SSSS (Malay), Hope Scale (Malay) and LOT-R (Malay). 52

4.4.1 Hope Scale (Malay) 52

4.4.2 LOT-R (Malay) 53

4.4.3 PTGI-SF (Malay) 54

4.4.4 SSSS (Malay) 55

4.5 Validity of the PTGI-SF (Malay), SSSS (Malay), Hope Scale (Malay) and LOT-R (Malay). 56

4.5.1(a) Hope Scale (Malay) 56

4.5.1(b) LOT-R (Malay) 57

4.5.1(c) PTGI-SF (Malay) 58

4.5.1(d) SSSS (Malay)..... 60

4.5.2 Discriminant validity 61

4.5.2(a) Hope Scale (Malay) vs LOT-R (Malay)..... 61

4.5.2(b) PTGI-SF (Malay) vs SSSS (Malay)..... 62

4.6 Exploratory factor analysis (EFA) 63

4.6.1 Hope Scale (Malay). 63

4.6.2 LOT-R (Malay)..... 64

4.6.3 PTGI-SF (Malay)..... 65

4.6.4 SSSS (Malay). 66

4.7 Confirmatory Factor Analysis (CFA)..... 67

4.7.1 CFA of the Hope Scale (Malay). 67

4.7.2 CFA of the LOT-R (Malay). 69

4.7.3 CFA PTGI-SF (Malay). 70

4.7.4 CFA SSSS (Malay)..... 72

CHAPTER 5 DISCUSSION 74

5.1 Summary of the objectives of the study. 74

5.2 The socio-demographic characteristics of the study population as compared to that of the country..... 74

5.2.1 Age..... 74

5.2.2 Gender..... 75

5.2.3 Race..... 75

5.2.4 Religion..... 76

5.2.5 Monthly income..... 76

5.2.6 Education status..... 76

5.3 Clinical characteristics of the study population as compared to that of the country 77

5.3.1 Cancer type diagnosis. 77

5.3.2 Duration of diagnosis. 78

5.3.3 Stage of cancer..... 78

5.3.4 Mode of treatment (baseline)..... 79

5.3.5 Mode of treatment (follow up). 79

5.4 Reliability..... 80

5.4.1 Reliability of the Malay version of the posttraumatic growth inventory-short form (PTGI-SF). 81

5.4.2 Reliability of the Malay version of the hope scale (HS). 81

5.4.3 Reliability of the Malay version of the sources of social support scale (SSSS). 82

5.4.4 Reliability of the Malay version of the life orientation test-revised (LOT-R). 83

5.5 Validity. 84

5.5.1 Face and content validity of the Malay versions of the Posttraumatic Growth Inventory-Short Form (PTGI-SF), the Hope Scale (HS), the Sources of Social Support Scale (SSSS) and the Life Orientation Test-Revised (LOT-R). 84

5.5.2 Construct validity of the Malay versions of the Posttraumatic Growth Inventory-Short Form (PTGI-SF), the Hope Scale (HS), the Sources of Social Support Scale (SSSS) and the Life Orientation Test-Revised (LOT-R). 89

5.5.2(a) Convergent validity of the Malay versions of the Posttraumatic Growth Inventory-Short Form (PTGI-SF), the Hope Scale (HS), the Sources of Social Support Scale (SSSS) and the Life Orientation Test-Revised (LOT-R). 89

5.5.2(b) Discriminant validity of the Malay versions of the Posttraumatic Growth Inventory-Short Form (PTGI-SF), the Hope Scale (HS), the Sources of Social Support Scale (SSSS) and the Life Orientation Test-Revised (LOT-R). 91

5.5.2(c) Factor analysis of the Malay versions of the Posttraumatic Growth Inventory-Short Form (PTGI-SF), the Hope Scale (HS), the Sources of Social Support Scale (SSSS) and the Life Orientation Test-Revised (LOT-R). 92

5.5.2(d) Exploratory and confirmatory factor analyses of the Malay versions of the Posttraumatic Growth Inventory-Short Form (PTGI-SF). 95

5.5.2(e) Exploratory and confirmatory factor analyses of the Malay version of the Sources of Social Support Scale (SSSS)..... 96

5.5.2(f)Exploratory and confirmatory factor analyses of the Malay version of the Hope Scale (HS)..... 99

5.5.2(g) Exploratory and confirmatory factor analyses of the Malay version of the Life Orientation Test-Revised (LOT-R). .. 100

5.6 Limitations of the study..... 101

5.7 Possible challenges in the use of the translated questionnaires. 103

5.8 Strength of the study..... 104

5.9 Clinical implications of the study findings. 106

CHAPTER 6 CONCLUSION 108

REFERENCES 110

APPENDICES

LIST OF TABLES

Page

Table 1	The internal consistency (Cronbach's α) for Hope Scale.	25
Table 2	The internal consistency (Cronbach's α) for PTGI-SF (Original)	25
Table 3	The internal consistency (Cronbach's α) for LOT-R	26
Table 4	The internal consistency (Cronbach's α) for SSSS	27
Table 5	Sociodemographic charecteristics of participants.	32
Table 6	Summary of clinical data.	41
Table 7	Mean and SD of baseline and follow up of the Hope Scale (Malay).	48
Table 8	Mean and SD of baseline and follow up of the LOT-R (Malay)	49
Table 9	Mean and SD of baseline and follow up of the PTGI-SF (Malay)	50
Table 10	Mean and SD of baseline and follow up of SSSS (Malay)	51
Table 11	Reliability of Hope Scale (Malay)	52
Table 12	Reliability of LOT-R (Malay)	53
Table 13	Reliability of PTGI-SF (Malay)	54
Table 14	Reliability of SSSS (Malay)	55
Table 15	Pearson's correlation coefficient of the Hope Scale (Malay) between the items and the domains.	56
Table 16	Pearson's correlation coefficient within the LOT-R (Malay) between the items and the domains	57
Table 17	Pearson's correlation coefficient within the PTGI-SF (Malay) between the items and the domains	58

Table 18 Pearson's correlation coefficient between items and domains of the SSSS (Malay)..... 60
Table 19 Pearson correlation coefficient between domains of the Hope Scale (Malay) with the LOT-R (Malay). 61
Table 20 Pearson correlation between domains of the PTGI-SF (Malay) and the SSSS (Malay). 62
Table 21 Exploratory factor analysis of the Hope Scale (Malay) with orthogonal Varimax rotation with Kaiser normalization 63
Table 22 EFA of the LOT-R (Malay) with orthogonal Varimax rotation with Kaiser normalization. 64
Table 23 EFA of the PTGI-SF (Malay) with oblique Promax rotation Kaiser normalization. 65
Table 24 Exploratory factor analysis of the SSSS (Malay) with orthogonal varimax rotation with Kaiser normalization. 66
Table 25 Summary of CFA of best fit model of the Hope Scale (Malay).....68
Table 26 Summary of CFA model of best fit of the LOT-R (Malay).....69
Table 27 Summary of CFA model of best fit of the PTGI-SF (Malay) 71
Table 28 Summary of CFA model of best fit of the SSSS (Malay).....72

LIST OF FIGURES

Page

Figure 1	Conceptual framework of the study.	16
Figure 2	Overview of study procedure	29
Figure 3	Total number of participants.	33
Figure 4	Age of the participants.	34
Figure 5	Gender of the participants.	35
Figure 6	Race of the participants.	36
Figure 7	Religion.	37
Figure 8	Income.	38
Figure 9	Marital status.	39
Figure 10	Education level.	40
Figure 11	Cancer diagnosis.	42
Figure 12	Duration of diagnosis.	43
Figure 13	Stage of cancer.	44
Figure 14	Mode of treatment that participants have undergone during baseline assessment.	45
Figure 15	Mode of treatment that participants had undergone during follow up.	46
Figure 16	CFA the Hope Scale (Malay) which showed the 2-factor model as the best-fit model.	68
Figure 17	CFA the Hope Scale (Malay) which showed the 2-factor model as the best-fit model.	70

Figure 18 CFA the PTGI-SF (Malay) which showed the 5-factor model as the best-fit model 71

Figure 19 CFA the SSSS (Malay) which showed the 3-factor model as the best-fit model. 73

LIST OF SYMBOLS

α	alpha
=	equal to
≥	equal or greater than
≤	equal or smaller than
<	less than
%	percentage
β	beta
ln (x)	$\log_e$ (x)
n	number

LIST OF ABBREVIATIONS

AIDS	Acquired immune deficiency syndrome
AMOS	Analysis of Moment Structure
ASHS	Adult State Hope Scale
ASQ	Attributional Style Questionnaire
ATHS	Adult Trait Hope Scale
CFA	Confirmatory factor analysis
CFI	Comparative Fit Index
CMIN	Chi-square value
CTHS	Children Trait Hope Scale
EFA	Exploratory factor analysis
ELOT	Extended life orientation test
GFI	Goodness of Fit Index
GLB	Greatest lower bound
HIV	Human immunodeficiency virus
HS	Hope Scale
IBM	International Business Machine
ICC	Intraclass correlation coefficient
KMO	Kaiser-Meyer-Olkin
LOT	Life orientation test
LOT-R	Life orientation test-revised
N	Number
NFI	Normed Fit Index
OPS	Optimism & Pessimism Scale

PTG	Posttraumatic growth
PTGI	Posttraumatic growth inventory
PTGI-SF	Posttraumatic Growth Inventory-Short Form
PTGI-X	Expanded posttraumatic growth inventory
RM	Ringgit Malaysia
RMSEA	Root Mean Square Error of Approximation
SRMR	Standardized Root Mean Square Residual
SSS-EDO	Spousal support scale
SSSS	Sources of social support scale
TLI	Tucker-Lewis Index

LIST OF APPENDICES

APPENDIX A	POSTTRAUMATIC GROWTH INVENTORY-SHORT FORM (MALAY).
APPENDIX B	HOPE SCALE (MALAY).
APPENDIX C	LIFE ORIENTATION TEST-REVISED (MALAY).
APPENDIX D	SOURCE OF SOCIAL SUPPORT SCALE (MALAY).
APPENDIX E	LIFE ORIENTATION TEST (LOT-R) (ORIGINAL).
APPENDIX F	HOPE SCALE (ORIGINAL).
APPENDIX G	POSTTRAUMATIC GROWTH INVENTORY-SHORT FORM (PTGI-SF) (ORIGINAL).
APPENDIX H	SOURCE OF SOCIAL SUPPORT SCALE (SSSS) ORIGINAL)

KESAHAN DAN RELIBILITI INVENTORI PERKEMBANGAN PASCA TRAUMA-BORANG PENDEK, SKALA HARAPAN, UJIAN ORIENTASI KEHIDUPAN-PINDAAN DAN SKALA SUMBER SOKONGAN SOSIAL VERSI BAHASA MELAYU DALAM KALANGAN PESAKIT KANSER

ABSTRAK

Latar belakang: Adalah penting untuk meninjau psikologi positif dalam kalangan pesakit kanser memandangkan psikologi positif mungkin akan meningkatkan kesejahteraan pesakit. Empat konstruk psikologi positif yang mungkin akan membawa kepada kesan positif dalam kalangan pesakit kanser ialah perkembangan pasca trauma (PTG), harapan, optimisme dan sokongan pasangan. Kajian ini bertujuan untuk menterjemahkan Inventori Perkembangan Pasca Trauma (PTGI-SF), Skala Harapan (HS), Ujian Orientasi Kehidupan-Pindaan (LOT-R) dan Skala Sumber Sokongan Sosial (SSSS) dalam Bahasa Melayu dan mengkaji ciri-ciri psikometrik versi Bahasa Melayu soal selidik tersebut. *Metodologi:* Penerjemahan PTGI-SF, HS, LOT-R dan SSSS versi Bahasa inggeris yang asal kepada Bahasa Melayu dan penerjemahan kembali kepada Bahasa Inggeris dilakukan serentak dan kemudian PTGI-SF, HS, LOT-R dan SSSS versi Bahasa Melayu dijawab oleh 195 pesakit kanser yang telah didiagnos dengan pelbagai jenis penyakit kanser pada penilaian pertama dan diulangi 2 bulan kemudian pada penilaian ulangan. *Keputusan:* PTGI-SF (Cronbach's α= 0.89, pekali korelasi intra-kelas= 0.75), HS (Cronbach's α= 0.72, pekali korelasi intra-kelas= 0.67) dan SSSS (Cronbach's α= 0.70, pekali korelasi intra-kelas= 0.72) versi Bahasa Melayu mempamerkan ketekalan dalaman dan kebolehpercayaan uji-uji semula yang boleh diterima. LOT-R versi Bahasa Melayu

(Cronbach's α= 0.58, pekali korelasi intra-kelas= 0.62) mempamerkan ketekalan dalaman yang kurang tetapi mempamerkan kebolehpercayaan uji-uji semula yang berpatutan. PTGI-SF, HS, SSSS dan LOT-R versi Bahasa Melayu mempamerkan kesahan konvergen memandangkan kesemua item dalam soal selidik menunjukkan korelasi yang tinggi dengan domain yang dikelaskan kecuali item 9 dan 10 dalam SSSS (Bahasa Melayu) yang mempunyai korelasi yang tinggi dengan domain sokongan negatif. Soal selidik versi Bahasa Melayu tersebut juga mempamerkan kesahan diskriminan memandangkan domain-domain PTGI-SF (Bahasa Melayu) tidak mempunyai korelasi yang tinggi dengan domain-domain SSSS (Bahasa Melayu) dan domain-domain HS (Bahasa Melayu) tidak mempunyai korelasi yang tinggi dengan domain-domain LOT-R (Bahasa Melayu). Analisis faktor penerokaan dan pengesahan juga menunjukkan bahawa item-item PTGI-SF (Bahasa Melayu) paling sesuai dikelaskan kepada 5 domain dan item-item HS (Bahasa Melayu) dan LOT-R (Bahasa Melayu) paling sesuai dikelaskan kepada 2 domain seperti soal selidik Bahasa Inggeris yang asal. Namun, item-item SSSS (Bahasa Melayu) paling sesuai dibahagikan kepada 3 domain, item 9 dan 10 lebih sesuai dikelaskan ke dalam domain sokongan negatif, manakala item-item dalam domain sokongan instrumental dan informasi paling sesuai dikelaskan ke dalam satu domain. *Kesimpulan:* PTGI-SF, SSSS, LOT-R dan HS versi Bahasa Melayu mempamerkan ciri-ciri psikometrik yang bersesuaian dan wajar digunakan untuk menilai perkembangan pasca trauma, harapan, optimisme dan persepsi sokongan pasangan masing-masing dalam kalangan pesakit kanser Malaysia.

VALIDITY AND RELIABILITY OF THE MALAY VERSIONS OF THE POSTTRAUMATIC GROWTH INVENTORY-SHORT FORM, HOPE SCALE, LIFE ORIENTATION TEST-REVISED AND SOURCE OF SOCIAL SUPPORT SCALE IN CANCER PATIENTS

ABSTRACT

Background: There is a growing need to explore positive psychology in cancer patients as positive psychology may enhance well-being of patients. There are four important positive psychology's components which may bring about positive outcomes in cancer patients i.e. posttraumatic growth (PTG), hope, optimism and spousal support. This study translated the Posttraumatic Growth Inventory- Short Form (PTGI-SF), Hope Scale (HS), Life Orientation Test-Revised (LOT-R) and Sources of Social Support Scale (SSSS) into Malay and investigated the psychometric properties of the Malay versions. *Methods:* Concurrent translation and back-translation of the English versions of the PTGI-SF, HS, LOT-R and SSSS were performed, and the Malay versions of the questionnaires were administered to 195 cancer patients of different cancer diagnoses at baseline and 2 months later at follow up assessment. *Results:* The Malay versions of the PTGI-SF (Cronbach's α= 0.89, intraclass correlation coefficient (ICC)= 0.75), the HS (Cronbach's α= 0.72, intraclass correlation coefficient (ICC)= 0.67), and the SSSS (Cronbach's α= 0.70, intraclass correlation coefficient (ICC)= 0.72) demonstrated acceptable internal consistency and test-retest reliability. The Malay version of the LOT-R (Cronbach's α= 0.58, intraclass correlation coefficient (ICC)= 0.62) has questionable internal consistency but acceptable test-retest reliability. The Malay versions of the PTGI-SF, HS, LOT-R, and

SSSS achieved convergent validity as all the items were highly correlated to their respective domains except for items 9 and 10 of the SSSS (Malay) which were highly correlated to the negative support domain instead of their designated domain of emotional support. The Malay versions of the questionnaires also achieved discriminant validity as the domains of the PTGI-SF (Malay) were not highly correlated to the domains of the SSSS (Malay), and the domains of the HS (Malay) not highly correlated to the domains of the LOT-R (Malay). Exploratory and confirmatory factor analyses demonstrated that the 5-factor model was the best fit for the PTGI-SF (Malay), and the 2-factor model was the best fit for the HS (Malay) and LOT-R (Malay) which were also true for the original English versions. However, the best fit model for the SSSS (Malay) was the 3-factor model with items 9 and 10 designated to the negative support domain, and the instrumental and informational domain items were best fitted in a single domain. *Conclusion:* The Malay versions of the PTGI-SF, SSSS, LOT-R and HS had acceptable psychometric properties and suitable to assess PTG, perceived spousal support, optimism and hope respectively in Malaysian cancer patients.

CHAPTER 1

INTRODUCTION

1.1 What is cancer and why is it important?

Cancer is a group of illnesses which is characterized by abnormal growth and division of abnormal cells beyond its usual boundaries to the extent in which it spread to other adjacent organs and body parts. These abnormal cells utilized the nutrients and oxygen supply of the normal cells of which they invade, deplete the normal cells of the nutrients and oxygen supply, hence leading to the death of the normal cells. Cancer could kill as it leads to non-functioning of the tissues and organs which they invade and is in fact associated with high mortality rate worldwide. Cancer is the second most common cause of death encompassing to 9.6 million deaths worldwide and 1 in every 6 deaths is due to cancer. Among the common cancer diagnoses which affect the global population are breast cancer, colorectal cancer, lung cancer, skin cancer, prostate cancer and stomach cancer (World Health Organization, 2018a).

Malaysia, which is moving towards becoming a developed country in the 21st century is not spared from the cancer statistics. In 2018, the Malaysian National Cancer Registry showed that 43,837 Malaysians are affected by cancer. Breast cancer is the most common cancer diagnosed in the population (7,593 patients), followed by colorectal cancer (6,137 patients), lung cancer (4,686 patients), nasopharyngeal carcinoma (2,089 patients) and hepatoma (1,944 patients). The number of cancer deaths registered in 2018 were 26,395 patients in the country (World Health Organization, 2018b). Due to the fatal consequences and outcome of cancer, those who are diagnosed with the illness are prone to emotional disturbances and psychological complications which may further cause deterioration in the health status of the patients. Nevertheless, positive psychology's components may play a role in improving the

outcomes of cancer patients as higher positive psychology level, such as posttraumatic growth (PTG), hope, optimism and perceived spousal support may be associated with lower psychological complications and improved quality of life of cancer patients. Hence, there is a need of validated instruments to assess this positive psychology in Malaysian cancer patients in order to gauge their interactions and their association with outcomes of cancer, such as psychological complications and quality of life.

The scope of this study covered the translation and back translation of the Posttraumatic Growth Inventory-Short Form (PTGI-SF), Hope Scale, Life Orientation Test-Revised (LOT-R), and Sources of Social Support Scale (SSSS) into the Malay language, and assessed their reliability (internal consistency and test-retest reliability) and validity (face, content, convergent, discriminant, and construct validity) in a sample of cancer patients with various cancer diagnoses, with subject recruitment and study conducted in Advanced Medical and Dental Institute (AMDI), Universiti Sains Malaysia for a duration of 2 years. This study did not cover other aspects of reliability, such as interrater reliability and other aspects of validity, such as criterion validity. It also did not assess the association between various factors and posttraumatic growth in cancer patients.

1.2 Objectives of the study

1.2.1 General objective

To translate the original English versions of the Posttraumatic Growth Inventory-Short Form (PTGI-SF), Hope Scale (HS), Life Orientation Test-Revised (LOT-R) and Sources of Social Support Scale (SSSS) into Malay and validate the Malay versions of these questionnaires.

1.2.2 Specific objectives

1.2.2(a) Objective 1

To translate and back-translate the original English versions of the PTGI-SF, HS, LOT-R and SSSS into Malay versions.

1.2.2(b) Objective 2

To assess the internal consistency and test-retest reliability of the Malay versions of the PTGI-SF, HS, LOT-R and SSSS.

1.2.2(c) Objective 3

To assess the face, content and construct validity (convergent and discriminant validities, exploratory and confirmatory factor analyses) of the Malay versions of the PTGI-SF, HS, LOT-R and SSSS.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Cancer is a life-threatening illness characterized by various physical and psychological complications which may arise due to the illness itself or from its treatment. As a result of its painful complications and its recurrent nature, cancer is commonly associated with psychological complications such as depression, anxiety disorders, adjustment difficulties, and posttraumatic stress disorder. The prevalence of depression in cancer patients varies across treatment settings which are 5% to 16% in outpatients, 4% to 14% in inpatients, and 7% to 49% in palliative care patients. Similarly, the prevalence of anxiety also varies across treatment groups i.e. 27% after treatment, 26% during treatment, and 19% during pre-treatment (Niedzwiedz et al., 2019, p. 3). As comparison, the prevalence of depression is at 29.9% (Yeoh et al., 2017, p. 1) and the prevalence of anxiety is at 18% (Wong et al., 2016, p. 1). Researchers in the past few decades have focused mainly on the negative complications of cancer and neglected the positive psychology which may also play a role in determining the outcome of the cancer patients. Since the 1990s, researchers have begun to focus on investigating the positive psychology affecting outcomes of cancer patients. Positive psychology is defined as a scientific approach to study human thoughts, feelings and behaviour which focus on the strength and the good outcomes it brings in life which allow others to progress in life instead of just resulting in one who is struggling in life to improve his/her life up to where it was before the struggle (Peterson, 2008). Positive psychology is broad which focus on positive states and traits, such as happiness, gratitude, hope, optimism, self-esteem, self-confidence, well-being, life satisfaction, posttraumatic growth, and benefit finding. One area in life which positive psychology

focus on is its effects onto the outcomes of various medical illnesses. Positive psychology has brought about numerous positive outcomes in management of medical illnesses, in which it has been reported to be associated with positive outcomes in cardiovascular diseases and diabetes mellitus. Positive effect, optimism, and subjective well-being are associated with improved outcome and reduce mortality among cardiovascular disease patients (Boehm and Kubzansky, 2012, pp. 655-691; Dubois et al., 2012, pp. 303-318). Higher level of hope has also been found to reduce the likelihood of the occurrence of diabetes mellitus, hypertension, and respiratory tract infection (Richman et al., 2005, pp. 422-429). However, studies on the effects of positive psychology on cancer is lacking and more comprehensive studies are needed on this aspect. Among the positive psychology which may bring about positive outcomes in cancer patients include PTG, hope, optimism and social support, particularly spousal support.

2.1.1 Posttraumatic growth in cancer patients.

Posttraumatic growth (PTG) is positive psychological changes experienced by a person as a result of struggle due to life-threatening crisis or event. PTG comprised of five components and someone who experienced higher PTG will have greater appreciation of life, improved interpersonal relationship, better personal strength, higher spiritual development and experiencing more possibilities in life. PTG develops only when there is major life crisis or event and it is not developed if someone experienced only minor life event. Instead of acting as a coping mechanism, PTG is actually an outcome as a result of struggle with the major life event or crisis. PTG develops only when one is attempting to make meaning out of the traumatic major life event. This occurred when the person pre-assumptive world was shattered by the

traumatic experience and he is able to make meaning out of the trauma by incorporating or accommodating the new trauma-related information to rebuild the assumptive world after the traumatic event. Hence, PTG is a phenomenon which resulted in positive psychological changes beyond the level attained prior to the trauma (Tedesche and Calhoun, 2004, p. 3-7). PTG is exhibited by patients of various cancer diagnoses such as breast cancer, head and neck cancer, lung cancer, hepatoma, lymphoma, leukemia, prostate cancer, malignant melanoma and testicular cancer (Prati and Pietrantoni, 2009, pp. 367-368; Shand et al., 2014, pp. 624-634; Casellas-Grau , Ochoa and Ruini, 2017, p. 2010). 367-368; Shand et al., 2014, pp. 624-634; Casellas-Grau , Ochoa and Ruini, 2017, p. 2010). PTG has been reported in Malaysian cancer patients in three studies, with the commonly reported domain of PTG was appreciation of life (Schroevers and Teo, 2008, pp. 1239-1246; Leong Abdullah et al., 2015, pp. 894-900; Leong Abdullah et al., 2019, p. 1). One of the studies, which investigated PTG in head and neck cancer patients indicated that PTG reduce across time (Leong Abdullah et al., 2015, pp. 894-900). PTG is important and should be a positive psychology characteristic to focus on in cancer patients as it is inversely correlated to depression and psychological distress (Shand et al., 2014, p. 624; Casellas-Grau et al., 2017, p. 2014). It is also positively correlated to health-related quality of life (Tomich and Helgeson, 2012, p. 567; Casellas-Grau et al., 2017, p. 2013).

2.1.2 Hope in cancer patients.

Hope is a positive goal-directed motivational state and it is also a dispositional trait which enables one to have a tendency to adopt a positive outlook in life. It is made up of two components i.e. (a) agency which is the perceived motivation to initiate and sustain movement to achieve goals set and (b) pathway which is perceived ability to

generate ways and paths to achieve the goals set. The degree of hope is dependent on how agency interacts with pathway. Hence, agency and pathway must be present in order to increase hope (Snyder et al., 1991, pp. 570-571). Hope is associated with several outcomes in cancer patients. Hope is negatively associated with depression, anxiety and psychological distress, while on the contrary, hopelessness is positively associated with depression and anxiety in cancer patients (Tae, Heitkemper and Kim, 2012, p. 49; Yang et al., 2014, p. 1; Lai et al., 2003, p. 485; Shimizu et al., 2012, p. 1975; Kim et al., 2011, p. 373; Han et al., 2013, p. 2529). Hope is also noted to be positively correlated with social connections in which higher hope is associated with better relationship with neighbors and friends, nursing care satisfaction and the quality of the social relationship in cancer patients. On the contrary, hopelessness is associated with poor confidant satisfaction (Jo and Son, 2004, p. 1184; Hou et al., 2010, p. 484; Chae and Kim, 2013, p. 298; Uchitomi et al., 2003, p. 61). Higher hope is associated with better quality of life and spiritual well-being of cancer patients (Jo and Son, 2004, p. 1184; Ryu and Yi, 2013, p. 121). Higher hope is also positively correlated with greater self-efficacy in cancer patients (Yang et al., 2014, p. 1; Chang and Li, 2002, p. 73; Lin and Tsay, 2005, p. 376). In addition, higher hope is also significantly associated with positive psychology such as posttraumatic growth, optimism, resilience and psychosocial adjustment in cancer patients (Ho et al., 2011, pp. 123-124; Hou et al., 2010, p. 484; Ryu and Yi, 2013, p. 121; Lee, 2001, p. 87). In the Malaysian context, hope is reported as the most significant factor associated with posttraumatic growth in cancer patients (Leong Abdullah et al., 2019, pp. 636-651). While hopelessness is negatively correlated to spiritual well-being and meaning in life in breast cancer patients (Raja Lexshimi et al., 2014, pp. 1-9).

In conclusion, hope is one positive psychology which is important to focus on in cancer patients with particular emphasis place in investigating the psychosocial interventions which may enhance hope; in which data is still lacking to date.

2.1.3 Optimism in cancer patients.

Optimism may sound similar to hope but these two phenomena are different. Optimism is the stable and consistent believe that good things rather than bad things will happen in one's life (Scheier et al., 1994, p. 1063). Hence, unlike hope, it is not related to goal-directed motivational state. In fact, studies of cancer patients have demonstrated that optimism and hope are indeed two different parameters (Ho et al., 2011, p. 124; Leong Bin Abdullah et al., 2019, p. 1). But similarly, optimism is associated with several positive outcomes in cancer patients. Optimism is shown to be positively correlated to psychological well-being but inversely correlated to depression and psychological distress. It is also positively associated with health-related quality of life in cancer patients (Miller et al., 1996, p. 115; Horney et al., 2011, pp. 68-69; Petersen et al., 2008, p. 15). In addition, optimism is also positively associated with positive psychology such as posttraumatic growth and hope in cancer patients. Optimism acts as a protective cognitive strategy which allow for reappraisal of the traumatic event and hence, it allows one to find meaning in the traumatic event which one experienced (Yi et al., 2105, pp. 985-986).

In the Malaysian context, study which investigate optimism in cancer patients is scarce. A study which investigated factors associated with PTG in Malaysian cancer patients of various cancer diagnoses does not support optimism as a significant predictor

of PTG. However, more studies in Malaysian cancer patients are needed to confirm this finding (Leong Abdullah et al., 2019, p. 636-651).

2.1.4 Social support in cancer patients.

Social support is the perception and reality that one is being cared for by others, having sufficient assistance from others and being included as a part of a supportive social network. Social support can be divided into four components i.e. emotional support, companionship support, informational support and instrumental support. Emotional support is attained if one received sufficient care, love, trust, acceptance, encouragement, affection and concern from others. Hence, it is the warmth and nurturance which one received from the sources of social support. Companionship support comprised of the support from the sources of social network which allowed the sense of belonging to oneself. Hence, spousal support is a form of companionship support. Informational support is sufficient if one is provided with information, advice, guidance and instruction particularly on how to solve one's problems. Instrumental support is where one is provided with sufficient financial assistance, services and goods by the sources of social support (Williams, 2005). Better social support, particularly spousal support has been reported to bring about positive consequences in cancer patients. Good social support protects cancer patients against psychological distress and psychopathology. It also promotes psychological adjustment to chronic medical illnesses such as cancer and reduce morbidity and mortality of cancer patients (Applebaum et al., 2014, p. 299). Perceived social support has been reported to enhance quality of life in cancer patients. Social support forms a bidirectional relationship with some positive psychology in cancer patients. It has been suggested that sources of social

support need less effort to provide social support to cancer patients with higher optimism as these patients have lesser emotional demands and this in turn provide a less stressful social environment for the interactions to occur (Trunzo and Pinto, 2003, p. 805). Spousal support in particular, help to promote active disclosure of life events and crises of cancer patients to their partner and this promote cognitive reappraisal of the traumatic event of cancer diagnosis and hence, promote meaning making out of the cancer experience and eventually leads to posttraumatic growth (Tedesche and Calhoun, 2004, p. 8; Shand et al., 2015, p. 624). In Malaysian breast cancer patients, PTG was found to be positively associated with instrumental support (Schroevers and Teo, 2008, pp. 1239-1246). In addition, a study of Malaysian cancer patients with various cancer diagnoses also indicated that spousal support was a significant predictor of PTG (Leong Abdullah et al., 2019, p. 636-651). The importance of spousal support in cancer patients is also illustrated by a retrospective study of breast cancer patients in Malaysia which reported that unmarried patients was a significant prognostic factor associated with mortality of breast cancer (Azman et al., 2019, pp. 143-145). Hence, social support, especially spousal support should be included in the study investigating factors enhancing positive outcomes in cancer patients.

2.2 Measures of positive psychology.

2.2.1 Instruments measuring posttraumatic growth in cancer patients.

There are several measuring tools to assess posttraumatic growth in cancer patients, such as posttraumatic growth inventory (PTGI), posttraumatic growth inventory- short form (PTGI-SF), and the expanded posttraumatic growth inventory (PTGI-X). Posttraumatic Growth Inventory, is a self-administered instrument used to assess the experience of positive change in a person that occurs as a result of traumatic events experienced by the person. It comprises of 21 items. The scale can be divided into 5 factors which are spiritual change personal strength, appreciation of life, new possibilities in life, and relating to others. Each item is rated in a Likert scale which range from 0= I did not experience this change to 5= I experienced this change to a great degree. Hence, the total score ranged from 0 to 105. The higher the score is, the greater the posttraumatic growth level. There is no cut-off point to determine whether the person exhibited PTG. The PTGI reported a Cronbach's α of 0.9 (internal consistency) and a test-retest reliability of 0.71 (intraclass correlation coefficient) (Tedeschi and Calhoun, 1996, pp. 455-471). PTGI may be used to assess PTG in cancer patients, but for cancer patients who may have short attention span, a shorter version of the questionnaire with lesser items may be more desirable for measuring PTG.

Posttraumatic growth inventory-extend (PTGI-X) is an extension version of the original PTGI in which another four items which is related to spiritual development was added to the spiritual change domain. Hence, the PTGI-X comprised of 25 items instead of the 21 items of the original PTGI. Confirmatory factor analysis confirmed that the new PTGI-X consists of 5 domains similar to the original PTGI and the spiritual change domain demonstrated good internal consistency with the total PTGI-X Cronbach's α

ranged from 0.95 to 0.97. Similarly, the 25-item PTGI-X may not be suitable to administer to cancer patients with lower attention span (Tedeschi et al., 2017, pp. 11-18).

Posttraumatic Growth Inventory-Short Form (PTGI-SF) is used in this study which derived from the original PTGI. It is made up of 5 factors with a total of 10 items in which each factors consist of 2 items. Higher PTGI-SF score of the person being assessed indicates higher level of PTG. PTGI-SF score could substitute for the PTGI score without any significant loss of information. Furthermore, it is also easier to administer to cancer patients as the duration of administration is shorter and hence, suitable even for cancer patients with shorter attention span or those who may be uncomfortable with physical symptoms of the illness or adverse effects of cancer treatment (Cann et al., 2010, pp. 127-137).

2.2.2 Instruments measuring hope in cancer patients.

There are several instruments available to measure the level of hope in a person, such as the children trait hope scale (Snyder et al., 1997, pp. 399-421), the adult state hope scale (Snyder et al., 1996, pp. 321-335), and the adult dispositional hope scale (Synder et al., 1991, pp. 570-585). The adult state hope scale measures the current state hope and of more proximal event of a person which comprised of 6 items with each item rated on a 8-point Likert scale (ranged from 1 = definitely false, to 8 = definitely true). It has two domains i.e. agency and pathway. It has good internal consistency with median Cronbach's α of 0.93 (Snyder et al., 1996, pp. 321-335). The children trait hope scale measures the dispositional hope of children around the age of 8 to 16 years old. It comprised of 6 items with two domains i.e. 3 items designated to agency and 3 items

designated to pathway. It has acceptable internal consistency with median Cronbach's α of 0.77 (Snyder et al., 1997, pp. 399-421). The gold standard of measurement of hope is the adult dispositional hope scale or adult trait hope scale. It comprised of 8 items with two domains i.e. 4 items designated to agency and 4 items designated to pathway. Each item is assessed in a 4-point Likert Scale (from point 1 to point 4) and therefore its total score ranged from 12 to 48. It also has another 4 items which act as fillers. Higher score indicates higher level of hope. It differs from the adult state hope scale as the adult dispositional hope scale measures the level of hope across situations and times. It has good internal consistencies with Cronbach's α ranged from 0.74 to 0.84 and test-retest reliability of 0.73 to 0.85 (Snyder et al., 1991, pp. 570-585).

2.2.3 Instruments measuring optimism in cancer patients.

There are also several instruments used to measure optimism, such as life orientation test (LOT) (Scheier and Carver, 1985, pp. 219-247), extended life orientation test (ELOT) (Chang, Maydeu-Olivares and D'Zurilla, 1997, pp. 433-440), and life orientation test-revised (LOT-R) (Scheier et al., 1994, pp. 1063-1078). LOT assesses optimism and pessimism. The LOT consists of 8 items plus fillers. Half of these items are designed to assess optimistic characteristics while another half assessed pessimistic characteristics. The responders extend their agreement or disagreement in a multipoint Likert scale for each item. It has good psychometric properties but was criticize because the optimistic and pessimistic items which made up the 2 factors are not always interrelated (Scheier and Carver, 1985, pp. 219-247). The ELOT comprised of 15 items which is formed from integrating the life orientation test with the optimism and pessimism scale (OPS), in which 7 items are from the LOT and 8 items from the

OPS. Each item is scored in a 5-point Likert scale ranged from: 1= ‘strongly disagree’ to 5= ‘strongly agree’. The internal consistency of the ELOT ranged from Cronbach’s α of 0.77 to 0.89 (Chang et al., 1997, pp. 433-440). The gold standard for assessing optimism is the life orientation test-revised (LOT-R) which was constructed to overcome the deficit of the life orientation test (LOT), in which the 2 factors formed by items i.e. optimism and pessimism are not interrelated in the latter. The revision omitted or rewrote items that did not focus on explicit expectations. Thus, LOT-R was introduced which is more brief (6 coded items with 3 framed in each direction i.e. optimism and pessimism) and the optimism and pessimism subsets are more strongly related to each other than in the original LOT. Each item is scored in a 5-point Likert scale similar to that of the LOT. The level of optimism is higher with higher total score in the optimism domain of the LOT-R. Its internal consistency and test-retest reliability are acceptable with Cronbach’s α of 0.78 and intraclass correlation coefficient of 0.60 to 0.79 (Scheier et al., 1994, pp. 1063-1078).

2.2.4 Instruments measuring perceived spousal support in cancer patients.

There are not many instruments to measure spousal support. There are two scales use to measure spousal support which are the spousal support scale (SSS-EDÖ) (Yidirim, 2004, pp. 19-25) and the sources of social support scale (SSSS) (Kinsinger et al., 2011, pp. 1571-1580). The SSS- EDÖ consist of 27 items with each item scored according to a 3-point Likert scale (from 1 to 3 points). It comprised of domains, such as instrumental and information support, appraisal support, social companionship support and emotional support. It has good internal consistency with Cronbach’s α of 0.95 and good test-retest reliability of 0.89 (Yidirim, 2004, pp. 19-25). The sources of

social support scale (SSSS) is a self-administered instrument to assess perceived spousal support which comprised of 10 items with 4 domains i.e. instrumental support, informational support, emotional support and negative support. Each item is scored on a 5-point Likert scale ranged from 0= not at all to 4= a lot. Hence, its total score ranged from 10 to 50. The higher the total score, the greater is the perceived spousal support of the person being assessed. It has good internal consistency with Cronbach's α ranged from 0.88 to 0.90 (Kinsinger et al., 2011, pp. 1571-1580). We are interested to translate and validate the SSSS as it is the only spousal support scale validated in cancer patients.

2.3 Justification of the study.

There are a few rationales behind conducting this study which translated and validated the Malay versions of the PTGI-SF, HS, LOT-R and SSSS:

(a) Data regarding PTG in Malaysian cancer patients is still lacking. Hence, it is important to study this positive psychology in the Malaysian cancer population to yield data which may be varied with the Western and other Asian cancer populations due to the diverse culture and ethnicity of Malaysia.

(b) It is vital to study how PTG is related to other important positive psychology in cancer patients, such as hope, optimism and spousal support as this psychology may decrease the risk of psychological complications and distress, and improve positive outcome, such as quality of life.

(c) Validated Malay versions of the PTGI-SF, HS, LOT-R and SSSS will allow measurements of PTG, hope, optimism and spousal support to gauge the efficacy of psychosocial interventions in interventional studies to enhance this positive psychology in cancer patients.

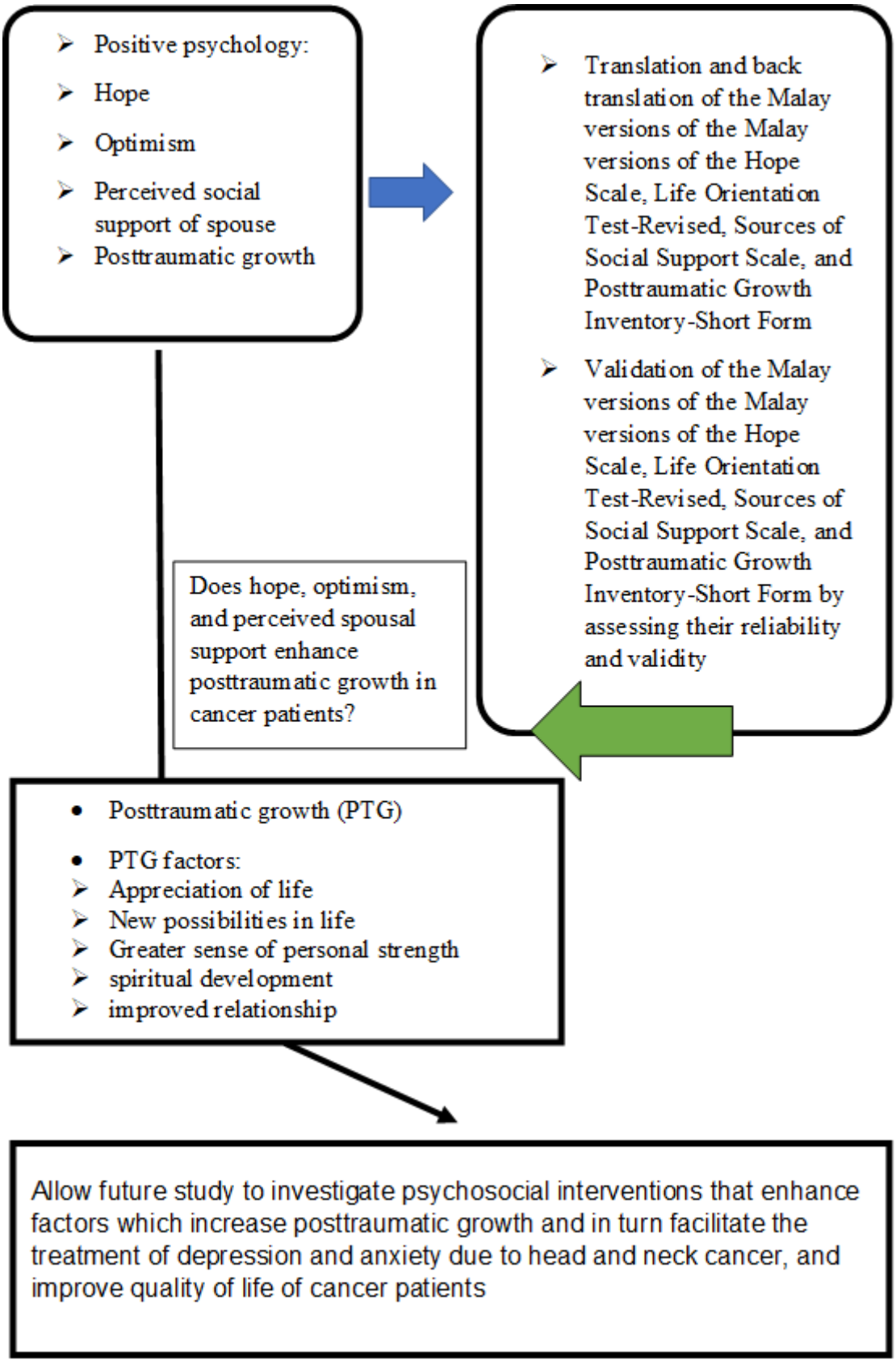

Figure 1: Conceptual framework of the study.

CHAPTER 3

METHODOLOGY

3.1 Study Setting

This study was planned by the Lifestyle Science Cluster in collaboration with the Radiological and Oncology Sciences Cluster and Division of Research, Publication and Innovation, Advanced Medical and Dental Institute, Universiti Sains Malaysia.

3.2 Study Design.

This prospective study was conducted for a duration of 2 years. Data collected run for a period of 1 year from 1st January 2016 until 31st December 2016. Data analysis and preparation for final report were completed from 1st January 2017 until 31st December 2017.

3.3 Ethical Issues.

Ethical approval (USM/JEPeM/15060178) was obtained from the Human Ethics committee of Universiti Sains Malaysia on 24th December 2015. Participants were explained thoroughly that they could choose to withdraw from the study at any time without any reason given and their information collected would not be used. The confidentiality and privacy of the result obtained were also explained to the participants and the data collected was not included in their medical report.

3.4 Study Population.

The study was opened to all patients with diagnosis of cancer at the out-patient clinic, day-care centre and in-patient ward of Oncology Unit of Advanced Medical and Dental Institute, Universiti Sains Malaysia.

The inclusion criteria for this study were:

1) All patients with diagnosis of cancer confirmed by histopathological report except for primary brain tumour.
2) 18 years old and above.
3) Absence of cognitive impairment. The cognitive function of the study participants was screened by administering the Malay Version of the Mini Mental State Examination (only participants with Mini Mental SE of ≥ 25/30 were included in the study).
4) Ambulatory patients.
5) Able to give and sign informed consent.
6) No brain metastasis.
7) Those who could understand, read and write in Bahasa Melayu.

The exclusion criterion of the study was:

1) Those who are too weak to complete the questionnaires.

3.5 Sampling Method

Purposive sampling was applied to select participants for the study.

3.6 Sample Size

The sample size required for this study as follows:

- To detect a correlation coefficient of 0.23 (Lua and Wong, 2012, pp. 1-13)

Significance level of 5% ($\alpha = 0.05$)

Power 80% ($\beta = 0.2$)

The standard normal deviated for $\alpha = Z\alpha = 1.960$

The standard normal deviate for $\beta = Z\beta = 0.842$

$C = 0.5 * \ln[1+r)(1-r)] = 0.234$

Total sample size = $N = [Z\alpha+Z\beta)/C]2+3 = 146$

$N = [2.802 / 0.234]2 + 3$

=146 patients.

Therefore, based on the calculations above, the required samples for this research is at 146 patients.

Estimated drop out at 15% out of 146 = 22 patients

Hence, the final sample needed based on objective 3 = 146 + 22 = 168 patients

- Calculation of sample size for internal consistency (based on objective 2):

From the Statstodo Program, we have found out that the sample size required for this study is at 4 subjects for each item.

Probability of Type 1 Error = 0.05

Power (1- Beta) = 0.8

Number of item = 38 items

Expected Cronbach's Alpha = 0.95 (Ramli et al., 2008, p. 1-8)

Sample size required = 4 (for each item)

Total sample based on overall item (38 items)

=4 x 38 = 152 patients.

=167 patients (plus 10% drop out)

- In this study, for calculation of sample size confirmatory factor analysis (based on objective 3), we used the Rule of 5, which states that adequate sample size should be at least five folds of the total number of variables, in which the subject-to-variable ratio is at least five or higher. The total number of items in all the 4 questionnaires is 38 items and each would require at least 5 subjects and thus the sample size needed for this study is 190 subjects.

  As a result, we will take a total sample size of 200 subjects in this study.

3.7 Method and Tools

3.7.1 Participants recruitment.

All cancer patients at the out-patient clinic, day-care centre and in-patient ward of Oncology Unit of Advanced Medical and Dental Institute, Universiti Sains Malaysia were approached by the research team.

Before the potential participants were enrolled in the study, the research team explained to them regarding the study and other information such as:

1) The participation in the study is voluntary and if the subjects decided to withdrawn at any time, they can do so without giving any reasons.
2) The purpose of the study.
3) Brief description of the study, the sequence of procedures and the assessments involved in the study.
4) The possible use of data solely for publication and the consent from participants to use the data for policy planning purpose if needed. Patients who met all inclusion criteria and without exclusion criterion were explained about the study and were offered to participate in the study. Those who voluntarily agreed to participate signed informed consent and then, they were enrolled for the study. Any personal identifiable information of the participants was not elicited and they were assured of their participation anonymity. As a token of appreciation, each of the participants was compensated with RM40 for each assessment for their time spent on the study and willingness to come for the assessment.

3.7.2 Data collection

Data collection was performed by a trained research assistant via direct interview and assessment of patients at the time of the first encounter during baseline assessment and then repeated two months later at follow up. The research team contacted the participants via telephone calls or message to remind them of appointment prior to follow up and adjusted timing according to their schedule. Participants allowed to come for follow up within 2 weeks prior to the 2-month follow up or at the follow up date but not later than 2-month follow up in order to ensure that test-retest reliability was measured more precisely. As a result, all participants came for follow up within 2 weeks prior to follow up and on follow up date. All participants were administered with the following questionnaires during baseline assessment:

1) Socio-demographic & clinical characteristic questionnaires.
2) Malay version of the Synder's Hope Scale [Hope Scale (Malay)].
3) Malay version of the Posttraumatic Growth Inventory-Short Form [PTGI-SF (Malay)].
4) Malay version of the Life Orientation Scale-Revised [LOT-R (Malay)].
5) Malay version of the Sources of Social Support Scale [SSSS (Malay)].

Data collection for clinical characteristics such as diagnosis and mode of treatment, and assessment with the PTGI-SF (Malay), the SSSS (Malay), the Hope Scale (Malay), and the LOT-R (Malay) were repeated during the follow up assessment.

3.7.3 Instruments used.

3.7.3(a) Socio- demographic & clinical factors questionnaires.

The questionnaire contains the following questions:

(a) Research number.

(b) Date of attendance: the date where the interview was conducted.

(c) Date of next appointment: date for 2nd assessment.

(d) Age: to the nearest age obtained from patient's date of birth.

(e) Gender: male/female.

(f) Race: numerical value Malays/ Chinese/ Indians / others.

(g) Religion: numerical Islam/ Buddhism/ Hindu / Christian.

(h) Monthly income: numerical value less than RM1000/ income between RM1000 and RM3000/ income between RM3000 and RM5000 / income more than RM5000. We did not follow the socio-economic classification of the Malaysian general population as most of the cancer patients were expected to have a lower monthly income of < RM 3000 per month (Farooqui et al., 2016, p. 323). Hence, we devised a wider classification at a lower monthly income range as above.

(i) Marital status: numerical value married / single.

(j) Education status: numerical value education until primary school / secondary school/ tertiary education.

(k) Diagnosis: cancer diagnosis. This information was obtained from the participant's case file.

(l) Duration of diagnosis: numerical value new case/ less than 3 months/ 3-6 months/ 6-12 months. This information was obtained from the participant's case file.

(m) Stage of cancer: staging was according to the International Union Against Cancer ie. Stage 1 to 4. This information was obtained from the participant's case file.

(n) Mode of treatment: numerical value no treatment / radiotherapy only/ surgery only/ chemotherapy only/ surgery and radiotherapy/ surgery and chemotherapy/ radiotherapy and chemotherapy/ surgery, radiotherapy and chemotherapy. This information was obtained from the participant's case file.

(o) Date of treatment: date for treatment of participant for surgery, chemotherapy and/or radiotherapy. This information was obtained from the participant's case file.

3.7.3(b) Hope Scale (HS)

It is a self-rated 12 items scale which assesses the responder's level of hope. It comprised of 2 subscales which incorporates Snyder's cognitive model of hope i.e. (a) agency (which is the goal-directed energy) and (b) pathways (which is the planning to accomplish the goals). 4 of the 12 items assess agency while another 4 items assess pathways. The other 4 items are fillers. Each item is scored using Likert-point scale from Totally Disagree to Totally Agree which the participants were asked to respond according to their likeliness. (Snyder et al., 1991, pp. 570-585).