

Reliability and Validity of the Brief COPE Scale (English Version) Among Women with Breast Cancer Undergoing Treatment of Adjuvant Chemotherapy: A Malaysian Study

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SUMMARY

This paper validates the Brief COPE Scale in Malaysian women with breast cancer. Test-retest evaluation was undertaken at two/three weeks and ten weeks following surgery. Internal consistencies ranged from 0.25 to 1.00. Meanwhile, the Intraclass Correlation Coefficient (ICC) ranged from 0.05 to 1.00. Sensitivity of the scale was indicated by the mean differences as observed in most of the domains with Effect Size Index (ESI) ranged from 0 to 0.53. Significant differences between mastectomy and lumpectomy were observed for Active coping, Planning and Acceptance. Brief COPE Scale showed fairly good reliability and validity.

KEY WORDS:

Brief COPE Scale, Internal consistency, Test-retest reliability and validity

INTRODUCTION

The literature on coping behavior among cancer patients has grown enormously^{1,2,3,4}. Coping strategies refer to the specific efforts, both behavioral and psychological that people employ to master, tolerate, reduce or minimize stressful events⁵. Previous research work showed that people use certain strategies (i.e. problem solving strategy and emotion-focused strategy) to fight or overcome stressful events⁶.

The Brief COPE scale was designed to assess a broad range of coping responses among adults for all diseases^{7,8}. It contains 28 items and is rated by the four-point likert scale, ranging from "I haven't been doing this at all" (score one) to "I have been doing this a lot" (score four). In this study, the higher score represents greater coping strategies used by the respondents. In total, 14 dimensions are covered by this scale. These are self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioural disengagement, venting, positive reframing, planning, humour, acceptance, religion and self-blame. Every dimension has two items.

Active coping is the process of taking active steps to attempt to get rid of the stressor or to reorganize its effects⁸. Planning is thinking about how to handle a stressor. It engages with

the action strategies, thinking about what steps to get hold of and how best to cope with the problem. Seeking instrumental support is looking for advice, help or information⁸. Meanwhile seeking emotional support is attainment of moral support, compassion or sympathetic. Behavioral disengagement is an action related to one's attempt to arrange with the stressor, even giving up the endeavour to accomplish goals with which the stressor is intrusive⁸. Behavioural and mental disengagement apparently meaning in coping as they do in other province, such as test anxiety, social anxiety and in the self-regulation of behaviour more commonly^{9,10,11}. Another dimension i.e. denial, is a response that occasionally appears in principal appraisal, practical, diminishing distress and in that way easing coping^{12,13,14}. Acceptance is a functional coping reaction, in that an individual who accepts the reality of a stressful situation would employ an effort to arrange with the situation⁸. Religion, another important dimension is included in the scale as it serves as a source of emotional support. It is observed that one might turn to religion when living under stressful events⁸.

A previous report to establish the reliability and validity of the scale indicated a high Cronbach's alpha values for some domains such as Religion ($\alpha=0.82$) and Substance use ($\alpha=0.90$)⁷. Other domains indicated acceptable values of Cronbach's alpha. They are Active coping ($\alpha=0.68$), Planning ($\alpha=0.73$), Positive Reframing ($\alpha=0.64$), Acceptance ($\alpha=0.57$), Humor ($\alpha=0.73$), Using Emotional Support ($\alpha=0.71$), Using Instrumental Support ($\alpha=0.64$), Self-distraction ($\alpha=0.71$), Denial ($\alpha=0.54$), Venting ($\alpha=0.50$), Behavioral disengagement ($\alpha=0.65$) and Self-blame ($\alpha=0.69$)⁷.

Thus, this paper examines the reliability and validity of the Brief COPE used in Malaysian women.

MATERIALS AND METHODS

This study was carried out in three main hospitals in Klang Valley namely The University of Malaya Medical Centre (UMMC), The Kuala Lumpur General Hospital (KLGH) and The Hospital Universiti Kebangsaan Malaysia (HUKM), Kuala Lumpur. Ethical approval was obtained from these various institutions as well as from the Ministry of Health Malaysia.

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The study inclusion criteria were women who satisfied the following criteria: new cases of breast cancer, had undergone breast cancer surgery, were planned for adjuvant chemotherapy and had no current major diseases or chronic psychiatric condition.

For the purpose of reliability and validity of the scale, two different phases of evaluation were undertaken in this study i.e. 1. At approximately two/three weeks following surgery (Prior-to chemotherapy, before first cycle of chemotherapy), 2. At approximately ten weeks following surgery (During chemotherapy, after the third cycle of chemotherapy). Those who agreed to participate in the study signed the consent form and filled-up the questionnaire themselves at clinic.

Socio-demographic data was also gathered from the patients such as age, ethnicity, education, occupation, monthly income and duration of marriage. Medical information such as type of surgery, time since diagnosis and stage of breast cancer were also obtained and recorded.

Data obtained was analysed using the Statistical Package of Social Science (SPSS) version 15.0. Thirty seven of the women with breast cancer agreed to participate, and answered the English Version of brief COPE Scale. The internal consistency of the Brief COPE Scale was assessed by calculating the Cronbach's alpha coefficient¹⁵. Meanwhile, the test-retest reliability was assessed using the intraclass correlation coefficient (ICC) which ranges from one (perfectly reliable) to zero¹⁶. Sensitivity to change of the scale was analyzed by calculating the mean differences between the evaluation at phase one (prior-to chemotherapy) and phase two (during chemotherapy) of the study, by means of a paired t-test. The effect size of each domain of Brief COPE scale was also presented¹⁵. In addition, the ability of the scale to discriminate the differences of coping strategies between women who had mastectomy and women who had lumpectomy, by means of independent t-test, was carried out to evaluate the discriminant validity of the scale.

RESULTS

Table I shows the medical and bio/socio-demographic background of the respondents. The mean age of the women was 49.08 (sd±9.90) years old. The majority of the women had undergone mastectomy (84%, n=31), as compared to lumpectomy (16%, n=6), with most of them diagnosed with stage two of breast cancer (68%, n=25), followed by stage three (24%; n=9) and stage one (8%, n=3). The time of diagnosis to participation in the study was a mean of 51.68 (sd±2.50) days. Based on menopausal status, majority of these women were pre-menopausal (49%, n=18), followed by the post-menopausal (45%, n=15) and the peri-menopausal (10.8%, n=4) group. In terms of ethnicity, Chinese formed the largest proportion of the study (48.6%, n=18) followed by Malays (32.4%, n=12), Indians (16.2%, n=6) and others (2.7%, n=1). These women had at least a secondary education (45.9%, n=17), with a household monthly income of at least RM3000 or USD854.94 (56.7%, n=21). Most of the women were unemployed or housewives (51.4%, n=19).

Table II depicts the internal consistency, Intraclass Correlation Coefficient, sensitivity and discriminant validity

of the scale. The internal consistency indicated by the Cronbach's alpha values ranged from 0.25 to 1.00. Meanwhile, the test-retest Intraclass Correlation Coefficient (ICC) ranged from 0.05 to 1.00. Sensitivity of the scale was indicated by the mean differences as observed in most of the domains. Some domains showed significant p-value i.e. Active Coping (p<0.001), Positive Reframing (p<0.001), Humor (p<0.01) and Using Instrumental Support (p<0.05). Meanwhile, Effect Size Index ranged from 0 to 0.53. The discriminant analysis showed that the scale was able to differentiate the coping strategies used between women with mastectomy and women with lumpectomy in domains like Active coping (p<0.01), Planning (p<0.01) and Acceptance (p<0.05).

Table I: Bio/socio-demographic and Medical Characteristics of the Women with Breast Cancer

Age (mean ± sd)	49.08±9.90 years
Ethnicity:	
Malay	12 (32.4%)
Chinese	18 (48.6%)
Indian	6 (16.2%)
Others	1 (2.7%)
Education Levels:	
Primary school	1 (2.7%)
Lower secondary	3 (8.1%)
Upper secondary	13 (35.1%)
Form 6/Diploma/Certificate	4 (10.8%)
Tertiary	16 (43.2%)
Household Monthly Income (RM3.80=USD1):	
Less than RM1000	3 (8.1%)
RM1001 to RM3000	18 (48.6%)
RM3001 to RM5000	9 (24.3%)
More than RM5000	4 (10.8%)
Occupation:	
Professionals	11 (29.7%)
Technicians and associate professionals	1 (2.7%)
Clerical workers	4 (10.8%)
Service workers/shop market sales workers	1 (2.7%)
Skilled agricultural and fishery workers	1 (2.7%)
Housewife	19 (51.4%)
Types of Breast Cancer Surgery:	
Mastectomy	31 (83.8%)
Lumpectomy	6 (16.2%)
Menopausal Status:	
Pre-menopausal	18 (48.6%)
Peri-menopausal	4 (10.8%)
Post-menopausal	15 (40.5%)
Stages of Breast Cancer:	
Stage 1	3 (8.1%)
Stage 2a	16 (43.2%)
Stage 2b	9 (24.3%)
Stage 3a	7 (18.9%)
Stage 3b	1 (2.7%)
Stage 3c	1 (2.7%)
Duration of Breast Cancer (mean ± sd) (From diagnosis to their participation in the study)	174.57±6.51 days

Table II: The Reliability and Validity of the English Version of the Brief COPE Scale

	Phase 1 Evaluation Mean (SD)	Phase 2 Evaluation Mean (SD)	Test-retest (ICC)	Internal consistency (Cronbach's alpha)	Sensitivity to change Mean differences (ESI)	Discriminant Validity ¹
Brief COPE:						
Active coping	5.84 (±1.50)	6.89 (±1.21)	0.44	0.50	1.00 (0.34)***	p<0.01
Planning	5.51 (±1.87)	5.83 (±1.67)	0.42	0.83	0.34 (0.09)	p<0.01
Positive reframing	4.96 (±1.18)	6.57 (±1.44)	<0.00	0.60	1.66 (0.53)***	NS
Acceptance	6.60 (±1.62)	6.71 (±1.63)	0.99	0.80	0.06 (0.02)	p<0.05
Humour	3.40 (±2.10)	2.86 (±1.54)	0.32	0.81	1.00 (0.26)**	NS
Religion	6.84 (±1.79)	7.09 (±1.08)	0.45	0.92	0.29 (0.10)	NS
Using emotional support	5.62 (±1.50)	6.09 (±1.40)	0.33	0.72	0.40 (0.14)	NS
Using instrumental support	5.84 (±1.72)	6.66 (±1.47)	0.36	0.83	0.77 (0.23)*	NS
Self-distraction	5.41 (±1.57)	5.48 (±1.84)	0.50	0.57	0.06 (0.02)	NS
Denial	5.70 (±1.47)	5.63 (±1.54)	0.97	0.58	0.03 (0.01)	NS
Venting	5.49 (±1.48)	5.60 (±1.58)	0.92	0.54	0.17 (0.06)	NS
Substance use	2.05 (±0.33)	2.06 (±0.34)	0.03	1.00	0.00 (0)	NS
Behavioural disengagement	4.70 (±1.13)	4.63 (±1.11)	1.00	0.74	0.00 (0)	NS
Self-blame	4.92 (±1.01)	4.89 (±1.08)	0.94	0.25	0.06 (0.03)	NS

***p<0.001; **p<0.01; *p<0.05

Phase 1 = At approximately two/three weeks following surgery; Phase 2 = At approximately ten weeks following surgery

ICC = Intraclass Correlation Coefficient

ESI = Effect Size Index

1. Discriminant validity of the scale was calculated by comparing two groups of women i.e. women with mastectomy and women with lumpectomy.

DISCUSSION

Most of the sub-scales from Brief COPE Scale indicated fair internal consistencies. This could be accepted as most of the subscales in the original Brief COPE scale also indicated Cronbach's alpha value which was less than 0.75⁷. Meanwhile, the ICC values were found to range from a low value to a high value (<0.00 to 1.00). Domains such as Active coping (0.44), Positive Reframing (<0.00), Humour (0.32), Religion (0.45), Using Emotional Support (0.33), Using Instrumental Support (0.36), Self-distraction (0.50) and Substance Use (0.03) showed poor ICC values, suggesting a poor agreement as compared to Acceptance (0.99), Denial (0.97), Venting (0.92), Behavioural Disengagement (1.00) and Self-blame (0.94) which showed excellent agreement. This could probably be due to the fact that the coping strategies which were based on the element of "action" were influenced by the phases of the treatment (pre- and during chemotherapy), while the coping strategies which were based on the element of "psychology" were found to be the opposite.

The Brief COPE scale showed a range of effect size, from trivial to moderate (0.00 to 0.53), with most of the action-based coping strategies [such as Active (p<0.001), Positive Reframing (p<0.001), Humor (p<0.01) and Instrumental Support (p<0.05)] showing high mean differences compared to the domains which were based on psychological elements. Variations in the sensitivity of the scale was perhaps due to the treatment situation measured prior-to and during chemotherapy phases, and not because of the low sensitivity of the scale to detect a change.

In this study, the Brief COPE Scale was able to differentiate certain coping strategies used by two groups of women with breast cancer namely women with mastectomy and women

with lumpectomy. These strategies were Active coping, Planning and Acceptance. However, no differences were observed between the mastectomy and lumpectomy groups in other domains. These findings are almost in line with the results of some previous studies^{17,18}. This could mean that the psychosocial aspect between women who had mastectomy and women who had lumpectomy were similar.

In conclusion, the Brief COPE Scale is a reliable and valid instrument which could to be used to be used for the Malaysian population, based on its acceptable internal consistency and the ability of the scale to detect the changes (indicated by the mean differences and the effect size values). However, the low ICC values and a small sensitivity of some of the domains could be due to the different treatment phases. Nonetheless, the results obtained in the current study is supported by previous studies^{7,17,18}.

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