The Efficacy of a Technology-based Program on Isolation, Resources, Support Care Needs, and Uncertainty among Asian American Breast Cancer Survivors

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Introduction

- Asian American breast cancer survivors (AABC)
  - Compared to Whites
    - Lower 5-year survival rate
    - Lower quality of life
      - Inadequate survivorship management
- Pain and Symptoms in AABC
  - Common, especially in the first few years after treatment
  - Asians are stoic to pain and symptoms and tend to suffer unnecessarily from pain that could be easily managed using a currently existing regimen

(Chen Jr, 2005; Chlebowski et al., 2005; Deapen, Liu, Perkins, Bernstein, & Ross, 2002; Eversley et al., 2005; Mandelblatt, 2004; Miller, Chu, Hankey, & Ries, 2008)

Introduction

- The effectiveness of a technology-based intervention:
  - Improves survival rates;
  - Narrows the ethnic gap in survival rates;
  - Reduces barriers to care; and
    - By providing information and support in ethnic minorities
  - Engages marginalized populations
    - Socially marginalized populations are reportedly more interested in e-health compared with those not marginalized
    - Expect equal and trustworthy relationships with healthcare providers compared with face-to-face settings

(Gustafson et al., 2001; Im, Chee, Tsai, Lin, & Cheng, 2005; Kreuter & Wray, 2003; Lieberman et al., 2003)

Introduction

- A theory-driven technology-based support program for Asian American Breast Cancer Survivors (AABC) was developed.
- **Purpose**: To determine the preliminary efficacy of a technology-based program on isolation, resources, support care needs, and uncertainty among Asian American breast cancer survivors.

Image: https://medicine.llu.edu/current-students/technology

Theoretical Basis

- Bandura's Self Efficacy Model (Bandura, 1982)
  - The intervention targets to improve cultural attitudes, self-efficacy, and social influences related to breast cancer survivorship and subsequently enhance isolation, resources, support care needs, and uncertainty.

(Bandura, 1982)

The Program

- Four languages: English, Mandarin, Chinese, Korean, and Japanese
- Ethnic-specific educational sessions (examples)
  1) Breast cancer and pain and symptom management
  2) Breast cancer interactive tutorial by the National Library of Medicine
  3) Survivorship and recurrence
  4) Facts for life after treatment
  5) Breast cancer and osteoporosis; and
  6) Alternative medicine (specifically for pain management with detailed information on Red Ginseng, herbal medicine, Acupuncture, and yoga)

Methods

- Study design
  - A Pre-post Test Pilot Study
- Samples and Settings
  - 94 Asian American breast cancer survivors from Internet cancer support groups and Internet communities
- Instruments
  - Baseline information
    - Developed by the research team which included questions on background factors (e.g., age, education) and disease factors (e.g., breast cancer types and stages)
  - Outcome variables
    - Personal Resource Questionnaire
    - Perceived Isolation Scale
    - Support Care Need Survey
    - Mishel Uncertainty in Illness Scale
    - Cancer Behavior Inventory (self-efficacy)
    - Brief Pain Inventory
    - Pain Beliefs and Perceptions Inventory

Methods

- Data Collection Procedures
  - June 2015 to May 2016
  - Participants used the technology-based program.
    - Answered pre-test, post-1 month, and post-3 month questionnaires.
- Data Analysis
  - Questionnaires automatically coded using REDCap system
  - SPSS 22.0 statistical software
    - Descriptive: Frequencies, percentages, means, standard deviation
    - Inferential: descriptive statistics and the repeated measures ANOVA.

Findings

- General characteristics of the participants

Characteristics		Intervention (N = 64)	Control (N = 30)	Total (N = 94)
		Mean ± SD or N (%)		
Age (years)		38.4 (6.20)	48.0 (11.1)	41.4 (9.1)
Sub-ethnicity				
	Chinese	63 (98.4)	13 (46.4)	76 (83.6)
	Korean	0 (0.0)	6 (21.4)	6 (6.5)
	Japanese	0 (0.0)	3 (10.7)	3 (3.3)
	Other	1 (1.6)	5 (17.9)	6 (6.5)
Born in U.S.		51 (81.0)	5 (19.2)	56 (62.9)
Length of stay in U.S.		14.9 (5.9)	16.2 (10.6)	15.7 (8.7)
Educational status				
	Below high school	2 (3.1)	1 (3.4)	3 (3.2)
	High school graduated	12 (15.8)	8 (27.5)	20 (21.5)
	College graduated	37 (57.8)	10 (34.5)	47 (50.5)
	Graduate degree	13 (20.3)	10 (34.5)	23 (24.7)

Findings

Characteristics	Intervention (N = 64)	Control (N = 30)	Total (N = 94)
	Mean ± SD or N (%)		
Marital status			
Single	0 (0)	2 (7.1)	2 (2.2)
Married	63 (98.4)	22 (78.6)	85 (92.4)
Divorced/separated/no longer partnered	1 (1.6)	4 (14.3)	5 (5.4)
Employment status (Yes)	12 (18.8)	12 (44.4)	24 (26.4)
Religion (Yes)	55 (85.9)	16 (53.3)	71 (75.5)

Findings

Characteristics		Intervention (N = 64)	Control (N = 30)	Total (N = 94)
		Mean ± SD or N (%)		
Degree of income sufficiency (Sufficient)		11 (56.4)	20 (75.9)	31 (34.4)
Use of facility (Yes)		63 (98.4)	24 (85.7)	87 (94.6)
Degree of perceived health (Healthy)		6 (9.5)	15 (55.5)	21 (23.3)
Years after breast cancer diagnosis		2.5 (1.20)	1.1 (0.59)	2.1 (1.2)
Invasive breast cancer (Yes)		32 (52.5)	18 (72.0)	50 (58.1)
Breast cancer stage				
	0	2 (3.5)	0 (0.0)	2 (2.5)
	1	41 (71.9)	18 (75.0)	59 (72.8)
	2	10 (17.5)	6 (25.0)	16 (19.8)
	3	4 (7.0)	0 (0.0)	4 (4.9)
Taking Medicine (Yes)		59 (95.2)	11 (42.3)	70 (79.5)

Findings

- Efficacy of the Program

Group	Variable	Assessment point	Mean (SE)	95% Confidence Interval		*F*	*p*
				Lower Bound	Upper Bound		
Intervention group	Pain	Pre	4.21 (1.94)	3.72	4.71	0.438	0.510
		Post	3.95 (1.96)	3.31	4.58		
	Perceived isolation	Pre	1.87 (0.49)	1.75	2.00	9.937**	0.002
		Post	1.48 (0.76)	1.23	1.72		
	Personal resources	Pre	4.31 (1.25)	3.98	4.63	6.612*	0.012
		Post	4.92 (0.98)	4.60	5.23		
	Support care need	Pre	4.54 (1.16)	4.24	4.83	8.299**	0.005
		Post	3.84 (1.21)	3.45	4.23		
	Uncertainty	Pre	2.70 (0.74)	2.51	2.89	8.722**	0.004
		Post	2.24 (0.79)	1.98	2.50		
	Self-efficacy	Pre	6.44 (2.11)	5.90	6.98	2.801	0.097
		Post	7.11 (1.61)	6.58	7.63		

Control group	Pain	Pre	5.63 (3.85)	4.20	7.07	0.123	0.728
		Post	6.08 (3.50)	3.86	8.31		
	Perceived isolation	Pre	5.75 (0.62)	5.51	5.98	0.197	0.660
		Post	5.64 (0.91)	5.06	6.21		
	Personal resources	Pre	2.20 (0.33)	2.07	2.32	1.051	0.311
		Post	2.31 (0.35)	2.09	2.54		
	Support care need	Pre	3.12 (1.07)	2.72	3.52	0.027	0.870
		Post	3.06 (1.27)	2.25	3.87		
	Uncertainty	Pre	2.83 (0.79)	2.54	3.13	2.207	0.145
		Post	3.20 (0.47)	2.90	3.49		
	Self-efficacy	Pre	7.10 (1.99)	6.35	7.84	0.267	0.608
		Post	6.73 (2.37)	5.22	8.23		

Note. SE = Standard error; Pre = baseline; Post = post 1-month of the study $^{**}p < .01$, $^{*}p < .05$ indicate the significant differences by assessment points

Discussion

- The findings supported the positive effects of technology-based programs on
  - “perceived isolation,” “personal resource,” “support care need,” and “uncertainly.”
  - The program effectiveness in improving pain was not significant though.
    - The program indirectly improve pain; maybe, the intervention period may be short to improve pain itself.

Limitations of the study

- A small sample size;
- Majority of the participants were Chinese;
  - Diverse recruitment strategies are needed to recruit women from other sub-ethnicity.
- Selected groups of participants (e.g., ability to use computers & Internet); and
- Self-reports on outcome variables.

Conclusions

- Technology-based programs could be used to enhance survivorship experience of Asian American breast cancer survivors.
- More studies are needed while
  - Including diverse groups of women from various sub-ethnic groups.
  - Extending the intervention period to be adequate to have effects on actual pain scores.

References

- Chen Jr, M. S. (2005). Cancer health disparities among Asian Americans: What we know and what we need to do. *Cancer, 104*(12 SUPPL.), 2895-2902. doi:10.1002/cncr.21501
- Chlebowski, R. T., Chen, Z., Anderson, G. L., Rohan, T., Aragaki, A., Lane, D., . . . Prentice, R. (2005). Ethnicity and Breast Cancer: Factors Influencing Differences in Incidence and Outcome. *JNCI Journal of the National Cancer Institute, 97*(6), 439-448. doi:10.1093/jnci/dji064
- Deapen, D., Liu, L., Perkins, C., Bernstein, L., & Ross, R. K. (2002). Rapidly rising breast cancer incidence rates among Asian-American women. *International Journal of Cancer, 99*(5), 747-750. doi:10.1002/ijc.10415
- Eversley, R., Estrin, D., Dibble, S., Wardlaw, L., Pedrosa, M., & Favila-Penney, W. (2005). Post-treatment symptoms among ethnic minority breast cancer survivors. *Oncology Nursing Forum, 32*(2), 250-254. doi:10.1188/05.ONF.250-256
- Gustafson, D. H., Hawkins, R., Pingree, S., McTavish, F., Arora, N. K., Mendenhall, J., . . . Salner, A. (2001). Effect of computer support on younger women with breast cancer. *J Gen Intern Med, 16*(7), 435-445. doi:10.1046/j.1525-1497.2001.016007435.x
- Im, E. O., Chee, W., Tsai, H. M., Lin, L. C., & Cheng, C. Y. (2005). Internet cancer support groups: A feminist analysis. *Cancer Nursing, 28*(1), 1-7. doi:10.1097/00002820-200501000-00001
- Kreuter, M. W., & Wray, R. J. (2003). Tailored and Targeted Health Communication: Strategies for Enhancing Information Relevance. *am j health behav, 27*(1), 227-232. doi:10.5993/ajhb.27.1.s3.6
- Lieberman, M. A., Golant, M., Giese-Davis, J., Winzlenberg, A., Benjamin, H., Humphreys, K., . . . Spiegel, D. (2003). Electronic support groups for breast carcinoma: A clinical trial of effectiveness. *Cancer, 97*(4), 920-925. doi:10.1002/cncr.11145
- Mandelblatt, J. (2004). Descriptive Review of the Literature on Breast Cancer Outcomes: 1990 Through 2000. *Journal of the National Cancer Institute Monographs, 2004*(33), 8-44. doi:10.1093/jncimonographs/lgh003
- Miller, B. A., Chu, K. C., Hankey, B. F., & Ries, L. A. (2008). Cancer incidence and mortality patterns among specific Asian and Pacific Islander populations in the U.S. *Cancer Causes Control, 19*(3), 227-256. doi:10.1007/s10552-007-9088-3

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