Development of oral health-related self-efficacy scale for the cancer patients

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Introduction

- Self-efficacy** is an **individual's expectation** that determines how well he or she can implement the actions necessary for producing certain results.
- It is reported that the oral health-related self-efficacy scale for the patients with **periodontitis** and **geriatrics** was developed.

There is no self-efficacy scale for the cancer patients.

Purpose of this study

This study developed the Oral health-related Self-Efficacy scale for the Cancer patients (OSEC), which contains 17 questions with four response options each.

Methods

Between July 2018 and May 2019, 203 participants were enrolled in the study. We conducted the survey to examine the validity and reliability of OSEC. Concurrent validity was determined by correlations with the self-efficacy scale for advanced cancer (SEAC). Discriminant validity was examined using good-poor analysis. Predictive validity was examined using plaque control record.

This study was conducted with the approval of the Medical Ethics Committee of Shimane University Faculty of Medicine (No.3243). We calculated two-tailed p-values in all of the analyses. The alpha level of significance was set at 0.05.

Result

Demographic and clinical characteristics of patients (N=203)		
Age		69.6 (11.3)
Sex	Male	129 (63.5)
	Female	74 (36.5)
Primary tumor site	Stomach	28 (13.8)
	Colorectal	25 (12.3)
	Liver	11 (5.4)
	Lung	65 (32.0)
	Prostate	21 (10.3)
	Breast	17 (8.4)
Stage	Head and Neck	36 (17.7)
	I	78 (38.4)
	II	39 (19.2)
	III	42 (20.7)
	IV	44 (21.7)

Promax rotated factor loadings for construct validity and internal consistency (N=203)					
Items	1	Factor loading			
		2	3	4	5
Factor 1. Oral function efficacy (OFE)					
I can talk smoothly.	0.84	0.10	0.39	0.17	0.20
I can swallow easily even without a drink or soup.	0.79	0.05	0.17	0.30	0.15
I can chew anything without a problem.	0.76	0.06	0.22	0.12	0.19
I can talk with others without worrying about my mouth.	0.75	0.19	0.38	0.21	0.33
Factor 2. Dental visit efficacy (DVE)					
I can go for routine checkups for oral health.	0.08	0.93	0.35	0.53	0.26
I can continue visiting the clinic periodically even after treatment to prevent a recurrence.	0.16	0.91	0.35	0.54	0.23
I can go for routine checkups even after discharged hospital.	0.09	0.84	0.36	0.41	0.36
Factor 3. Adverse effect efficacy (AEE)					
I can use special techniques to relieve the symptoms when the condition of my mouth change.	0.34	0.24	0.85	0.44	0.24
I can check the change and abnormality of my mouth.	0.30	0.30	0.79	0.36	0.36
I can keep clean my mouth when the condition of mouth change.	0.23	0.44	0.76	0.41	0.54
I can keep clean my mouth even when I feel heavy.	0.20	0.34	0.74	0.44	0.47
Factor 4. Symptom coping efficacy (SCE)					
I can listen to and follow necessary advice for oral adverse effect.	0.12	0.51	0.39	0.89	0.28
I can use a medicine and oral care tools to relieve the oral adverse effect.	0.30	0.44	0.51	0.85	0.30
I can consult medical staff on how to relieve the oral adverse effect.	0.25	0.52	0.52	0.85	0.34
Factor 5. Brushing habit efficacy (BHE)					
I can use special techniques to brush my teeth.	0.28	0.26	0.45	0.29	0.86
I can brush my teeth thoroughly.	0.29	0.18	0.43	0.30	0.85
I can check the cleanliness of my mouth.	0.10	0.32	0.27	0.19	0.73
Sum of squares on factor loading	6.00	2.30	1.55	1.21	0.90
Variance explained (%)	35.1	13.5	9.10	7.10	5.23
Cumulative variance explained (%)	35.1	48.7	57.8	64.9	70.1
Cronbach's α	0.75	0.79	0.88	0.84	0.80

Conclusion

We developed the OSEC as a multidimensional oral health-related self-efficacy scale for the cancer patients.

Relationship between OSEC and self-efficacy scale for advanced cancer (SEAC) for concurrent validity.

	OSEC	OFE	DVE	AEE	SCE	BHE	Total
SEAC							
ARE	r	0.37**	0.40**	0.41**	0.46**	0.25**	0.54**
	P-value	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SCE	r	0.39**	0.41**	0.48**	0.49**	0.27**	0.58**
	P-value	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
ADE	r	0.43**	0.33**	0.39**	0.45**	0.19**	0.51**
	P-value	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SE (Total)	r	0.42**	0.40**	0.45**	0.49**	0.25**	0.57**
	P-value	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

OFE, oral function efficacy; DVE, dental visit efficacy; AEE, adverse effect efficacy; SCE (OSEC), symptom coping efficacy; BHE, brushing habit efficacy; ARE, affect regulation efficacy; SCE (SEAC), symptom coping efficacy; ADE, activity of daily life efficacy; SE, total self-efficacy

Test-retest reliability of oral health-related self-efficacy scale for the cancer patients by intra-class correlation coefficient. (N=20)

Factor	ICC (95% CI)
OFE	0.82 (0.55 - 0.93)
DVE	0.76 (0.40 - 0.91)
AEE	0.90 (0.74 - 0.96)
SCE	0.86 (0.64 - 0.94)
BHE	0.91 (0.77 - 0.96)
Total	0.92 (0.79 - 0.97)

OFE, oral function efficacy; DVE, dental visit efficacy; AEE, adverse effect efficacy; SCE (OSEC), symptom coping efficacy; BHE, brushing habit efficacy; ICC, intra-class correlation coefficient

Good-Poor analysis of oral health-related self-efficacy scale for the cancer patients for discriminant validity

Variable		Mean (SD)	95% CI of difference	Effect size	P
OFE	High group	12.0 (1.94)	-2.97 - -1.91	0.54	<0.01
	Low group	9.57 (1.91)			
DVE	High group	9.29 (1.71)	-2.52 - -1.61	0.53	<0.01
	Low group	7.22 (1.59)			
AEE	High group	11.70 (1.66)	-2.99 - -2.10	0.62	<0.01
	Low group	9.16 (1.53)			
SCE	High group	9.34 (1.22)	-1.90 - -1.18	0.51	<0.01
	Low group	7.80(1.39)			
BHE	High group	8.64 (1.32)	-2.32 - -1.51	0.55	<0.01
	Low group	6.72 (1.53)			
Total	High group	50.98 (4.74)	-11.64 - -9.35	0.79	<0.01
	Low group	40.48 (3.55)			

OFE, oral function efficacy; DVE, dental visit efficacy; AEE, adverse effect efficacy; SCE (OSEC), symptom coping efficacy; BHE, brushing habit efficacy; CI, confidence interval

Predictive validity at the 1st and 2nd time comparing between high and low group of plaque control record by t-test (N=26)

Discussion

- OSEC shows a multidimensional scale (five dimensions).
- Cronbach's α and ICC as reliability comparable to other self-efficacy scale.
- The relationship between OSEC and SEAC resulted in reasonable values.
- Good-poor analysis showed that there were significant differences between all subscale.
- OSEC have a predictive capability for brushing habits.

The validity and reliability of OSEC was certified.

Future study

A exploratory study to search related factors of OSEC is needed.

Reference

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