

Factors of risk behaviors for exposure to endocrine disruptors in female college students in Korea*

* This research was supported by Basic Science Research Program through the National Research Foundation of Korea(NRF) funded by the Ministry of Education(NRF-2015R1D1A3A01017746)

1) SoMi Park, 2) ChaeWeon Chung

1) PhD, RN, Professor, Institute for Well Aging, Wonju College of Medicine, Yonsei University, Wonju, South Korea.

2) PhD, RN, Professor, College of Nursing, Research Institute of Nursing Science, Seoul National University, Seoul, South Korea.

Background & Purpose

- Environmental hormones are known to affect women's health, inducing endocrine imbalances and reproductive health issues.
- As college students live more independently, they consume more fast food, disposable products, and convenient household items, which make them exposed to more environmental hormones. Protecting women's reproductive health is crucial for the succession of health to the next generation.
- This study examined the factors associated with risk behaviors for exposure to endocrine disruptors in female college students in Korea.

Method

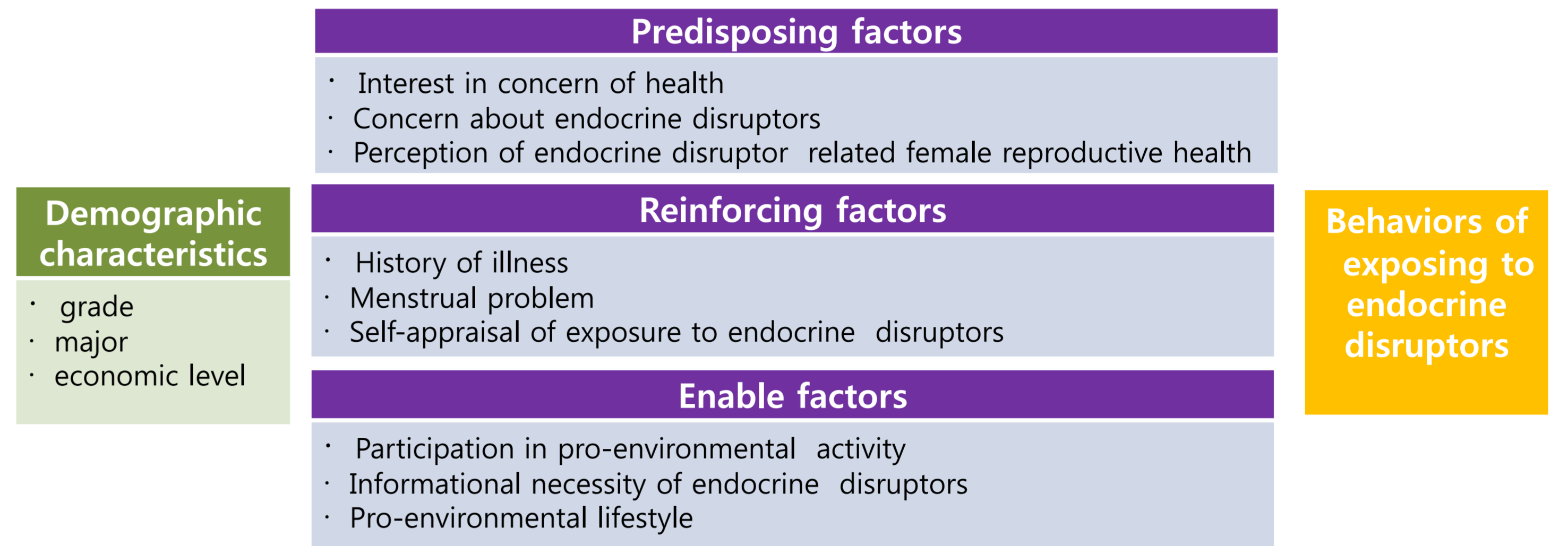
Design

- A cross-sectional correlative study

Sample & Data collection procedure

- Sample:** 199 female college students
- Sampling procedure:** convenient sampling in campus of university from September to October in 2015
- Data Collection method:** A questionnaire survey

Conceptual Framework



Result

1. Distribution of study variables (N=199)

Variables	n(%)	M±SD(Range)
Interest in concern of health		6.35±2.14(1~10)
Concern about endocrine disruptors		5.67±2.17(1~10)
Perception of endocrine disruptor related female reproductive health		18.20±2.97(6~24)
Menstrual problem	Yes 94(47.2) No 105(52.8)	
Self-appraisal of exposure to endocrine disruptors		17.55±4.07(8~32)
Informational necessity of endocrine disruptors		18.08±4.37(6~24)
Participation in pro-environmental activity	Have done 105(52.8) Have not done 94(47.2)	
Pro-environmental lifestyle		20.01±5.03(8~32)
Endocrine disruptors endangering behaviors		56.24±14.10(24~96)

2. Differences in associating factors and endocrine disruptors endangering behaviors by participant's characteristics (N=199)

	Grade					F/χ ² (p)	Major				F/χ ² (p)	Economic level			F/χ ² (p)
	1 st grade (n=69)	2 nd grade (n=37)	3 rd grade (n=42)	4 th grade (n=51)	Liberal art (n=106)		Natural science (n=75)	Physical education (n=18)	high ^a (n=36)	middle ^b (n=152)		low ^c (n=11)			
	M±SD/f(%)						M±SD/f(%)					M±SD/f(%)			
Interest in concern of health	6.04±2.40	6.16±2.08	6.54±2.05	6.74±1.84	1.26 (.287)	6.16±2.21	6.60±1.95	6.38±2.42	0.88 (.414)	7.55±1.48	6.04±2.18	6.63±2.11	7.28 (.001) a>b		
Concern about endocrine disruptors	5.66±2.11	5.48±2.38	5.26±2.13	6.17±2.10	1.51 (.214)	5.58±2.06	5.89±2.32	5.33±2.27	0.68 (.505)	6.58±2.01	5.42±2.17	6.27±1.90	4.75 (.010) a>b		
Perception of endocrine disruptor related female reproductive health	18/36±2.52	17.70±3.25	17.92±3.12	18.58±3.18	0.82 (.485)	17.79±3.00	18.72±2.72	18.50±3.52	2.26 (.106)	18.33±2.62	18.21±3.04	17.72±3.19	0.17 (.840)		
Menstrual problem	Yes(94) No(105)	16(8.0) 21(10.6)	16(8.0) 26(13.1)	25(12.6) 26(13.1)	2.83 (.417)	48(24.1) 58(29.1)	37(18.6) 38(19.1)	9(4.5) 9(4.5)	0.35 (.840)	20(10.1) 16(8.0)	69(34.7) 83(41.7)	5(2.5) 6(3.0)	1.21 (.543)		
Self-appraisal of exposure to endocrine disruptors	17.89±3.98	16.81±3.25	18.61±5.45	17.21±4.25	1.40 (.243)	17.62±4.58	17.48±3.94	18.77±4.65	.659 (.519)	17.94±6.07	17.67±3.87	16.81±4.28	.28 (.756)		
Informational necessity of endocrine disruptors	18.47±4.55	17.70±3.25	17.38±3.88	18.33±4.64	0.66 (.579)	18.03±4.83	18.12±3.71	18.16±4.28	0.01 (.989)	19.41±2.98	17.80±4.59	17.54±4.56	2.09 (.126)		
participation in pro-environmental activity	Yes(105) No(94)	28(14.1) 16(18.0)	18(9.2) 24(12.1)	25(12.6) 26(13.1)	3.04 (.333)	52(26.1) 54(27.1)	41(20.6) 34(17.1)	12(6.0) 6(3.0)	2.08 (.352)	29(14.6) 7(3.5)	73(36.7) 79(39.7)	3(1.5) 8(4.0)	15.39 (<.001)		
Informational necessity of endocrine disruptors	18.47±4.55	17.70±3.25	17.38±3.88	18.33±4.64	0.66 (.579)	18.03±4.83	18.12±3.71	18.16±4.28	0.01 (.989)	19.41±2.98	17.80±4.59	17.54±4.56	2.09 (.126)		
Pro-environmental lifestyle	20.39±5.96	19.94±5.18	19.14±3.30	20.25±4.78	0.59 (.625)	19.39±5.15	20.44±4.30	21.83±6.66	2.26 (.106)	23.66±4.63	19.25±4.81	18.45±4.27	13.14 (<.001) a>b, a>c		
Behaviors of exposing to endocrine disruptors	55.65±14.24	56.08±14.38	55.11±13.50	58.09±14.08	0.42 (.738)	56.83±14.46	55.86±12.51	54.33±18.31	0.28 (.753)	45.80±13.76	58.38±13.11	60.90±13.88	13.78 (<.001) a<b, a<c		

3. Hierarchical regression analysis for factors associated endocrine disruptors endangering behaviors (N=199)

Factors	Model1				Model2				Model3				Model4			
	β	t	p	VIF	β	t	p	VIF	β	t	p	VIF	β	t	p	VIF
Demographic																
D1	-.349	-5.224	<.001	1.000	-.222	-3.589	<.001	1.092	-.218	-4.386	<.001	1.099	-.146	-3.028	.003	1.207
Predisposing																
P1					-.258	-4.028	<.001	1.171	-.165	-3.107	.002	1.257	-.091	-1.770	.078	1.351
P2					-.314	-4.988	<.001	1.131	-.006	-.097	.923	1.547	-.112	-1.933	.055	1.724
P3					-.117	-1.968	.051	1.013	-.120	-2.497	.013	1.032	-.120	-2.687	.008	1.034
Reinforcing																
R1									-0.78	-1.606	.110	1.052	-.070	-1.541	.125	1.055
R2									-.001	-.026	.979	1.025	-.012	-.276	.783	1.036
R3									-.603	-10.192	<.001	1.556	-.446	-7.279	<.001	1.940
Enable																
E1													-.019	-.396	.693	1.213
E2													-.382	-5.576	<.001	1.989
F(p)	27.289(<.001)				23.072(<.001)				36.120(<.001)				36.373(<.001)			
R ²	.117				.308				.554				.617			
R ² change					.201				.247				.064			

D1=economic level (high=1), P1= Interest in concern of health, P2= Concern about endocrine disruptors, P3= Perception of endocrine disruptor related female reproductive health
R1= Menstrual problem (yes=1), R2= Self-appraisal of exposure to endocrine disruptors R3= Informational necessity of endocrine disruptors E1= Participation in pro-environmental activity, E2= Pro-environmental lifestyle

Conclusion

- Women with less sense of need for information about endocrine disruptors and a poor pro-environmental lifestyle engage in more risk behaviors for exposure to endocrine disruptors.
- Education should include practical information about endocrine disruptors and should focus on leading young women to a pro-environmental lifestyle.