# Development of an Educational Program for Women's Health Related to Endocrine Disruptors\*

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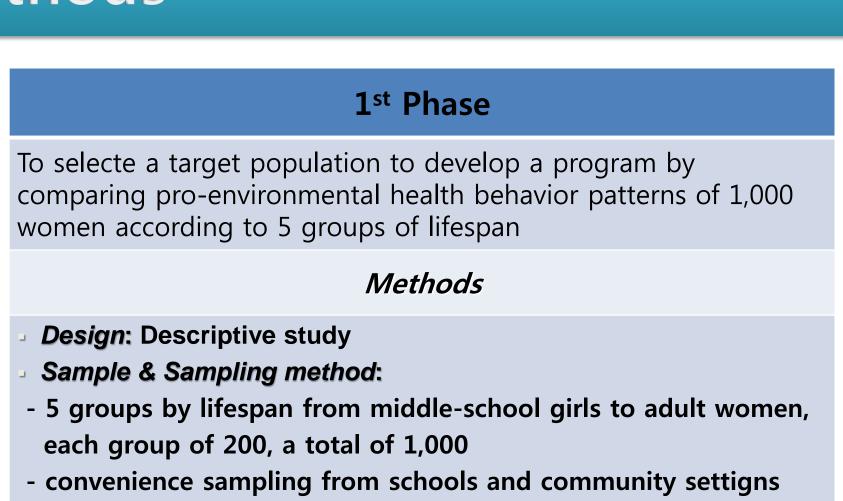
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# Background & Purpose

- Precocious puberty has become an issue in Korea, showing a 4.4-fold increase in the past 5 years. Exposure to endocrine disruptors(EDCs) from surrounding environment is known as one factor threatening reproductive health of young women, further needs an preventible health strategies.
- Behavior is habitual and guided by cognitive processes, and awareness and perception are essential for individuals to obtain information and to participate in optimal health behaviors. Thus, proper education for young women population is needed to help them strehngthen health behaviors related to endocrine disruptors throughout their lifespan.

# Methods

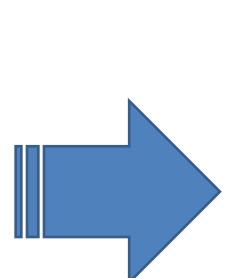


Markowitz et. (2012) 'Profiling the Pro-Environmental Individual'

- Consumption behaviors: 4-point Likert scale, 9 items

- Recyciling behaviors: 4-point Likert scale, 6 items Data collection: Self-reporting using a questionnaire

Data analysis: Descriptive statistics, ANOVA



# 2<sup>nd</sup> Phase

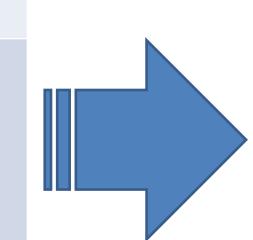
To extract benefits and barriers of pro-environmental behaviors from a target population of early adult of female college women

#### Methods

**Design**: Descriptive qualitative study Sample & Sampling method.

- Convenience sampling of 40 college women at campus Key questions:
- "What are the barriers for you to reduce the exposure to EDCs?"
- "What do you think are the benefits of reducing the exposure to EDCs?

Data collection: 1:1 interview Data analysis: Content analysis



### 3<sup>rd</sup> Phase

To developing an educational program

#### Methods

**Design**: Methodological study

#### **Process**

- 1) Establish a preliminary program
- Framework of Dixon's Integrative Environmental Health Model
- Contents from literature review
- Evidences of benefits and barriers

2) Validation of the program by experts

## Result

Instrument:

## Stage 1. Difference of pro-environmental behaviors in women by their lifespan

Behavior (score range)	Middle-school Girls a)	High-school Girls <sup>b)</sup>	College Women <sup>c)</sup>	Mother of Infant/Toddler <sup>d)</sup>	Adult Women <sup>e)</sup>	F(P)
	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD
Pro-enviromnetal Behaviors (15-60)	39.75±6.17	39.34±5.15	39.96±5.13	43.82±5.65	40.49±5.54	21.21(<.001) d>a,b,c,e
- Consumption Behaviors (9-36)	24.60±3.88	23.97±3.36	24.59±3.34	26.63±3.82	24.37±3.59	16.53(<.001) d>a,b,c,e
- Recycling Behaviors (6-24)	15.14±3.43	15.37±2.96	15.37±2.69	17.18±2.66	16.14±2.79	16.42(<.001) d>a,b,c,e e>a

### Stage 2-1. Barriers to reduce exposure to EDCs

Classification	f	%
Time restraints	11	15.3
Limited knowledge about EDCs	13	18.1
Troublesome	21	29.1
Unavailability of substitution	13	18.1
Economic concerns	8	11.1
No interests	6	8.3
TOTAL	72	100

### Stage 2-2. Benefits of reducing exposure to EDCs

Classification	f	%
Relief of menstrual pain	7	20.5
Keeping the regularity of the cycle	2	5.9
Alleviation of skin trouble	3	8.9
Increasing fertility	2	5.9
Stabilizing the emotional condition	2	5.9
Reducing harmful effects on reproductive organs	2	5.9
Making health better	16	47.0
TOTAL	34	100

### Stage 3. Prototype of the educational program

Domain	Components	The study characteristics	Contents of the educatioal program
Physiological	<ul><li>➤ Agents</li><li>➤ Exposure</li><li>➤ Incorporation</li><li>➤ Health effects</li></ul>	<ul> <li>➤ Female college students</li> <li>➤ Exposure to EDCs</li> <li>➤ Reproductive health problems related to EDCs</li> </ul>	<ul> <li>Self-appraisal of the degree of exposure to EDCs</li> <li>Check-up of physical &amp; emotional symtoms related to reproductive health</li> </ul>
Vulnerability	➤ Individual characteristics     ➤ Community characteristics	➤Use of disposables and color make-up ➤Living in dormitory apart from the family	<b>Count sources and frequencies of exposure to EDCs</b>
Epistemological	<ul><li>➤ Personal thinking</li><li>➤ Social knowledge</li></ul>	<ul> <li>➤ Knowldege about EDCs</li> <li>➤ Influences from information resources (media, friends, parents etc.)</li> </ul>	<ul> <li>Screening the level of knowledge about EDCs</li> <li>Identifying the information resources of EDCs</li> </ul>
Health protection	<ul><li>➤ Concern</li><li>➤ Efficacy</li><li>➤ Action</li></ul>	<ul> <li>➤ Interests in EDCs</li> <li>➤ Efficacy of behaviors</li> <li>➤ Performing pro-environmental health behaviors</li> </ul>	<ul> <li>Explaining the relationships between EDCs and reproductive health problems</li> <li>Clarifying benefits and barriers</li> <li>Giving personalized and relevant EDCs information about clothing, diet, and housing life</li> <li>Offering strategies of exposure to and consumption of EDCs</li> <li>Inducing perfomance through contract for action</li> </ul>

# Conclusion

- The first educational program for women's health related to EDCs was developed in Korea.
- Future study will evaluate the effects of the program after verifying its applicability and feasibility in female college students by a pilot study.