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DERIVING EDCS RISK PERCEPTION MODEL USING PSYCHOLOGICAL EFFECT VARIABLES IN KOREA

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Introduction

Endocrine disrupting chemicals(EDCs) have received considerable attention due to their ubiquity in the environment and the increased incidence of endocrine-related disorders in humans, including pregnancycomplications, genital malformations (i.e. cryptorchidism and hypospadias in male infants), and cancer (i.e. breast, ovarian, prostate, testicular)1).EDCs are natural or synthetic compounds capable of interfering with the biosynthesis, storage, release, transport, and/or receptor binding of endogenoushormones,ultimately interfering with the proper functionsof these hormones2). About 800 commercial chemicals are suspected to interfere with the endocrine system, but only a small fraction of these has been tested for potential adverse effects1). Although the precise mechanisms responsible for exposure-induced phenotypes are unknown, epigenetic mechanisms have been proposed to mediate developmental reprogramming and subsequent disease susceptibility that occurs later in life.The fetus and neonate represent particularly vulnerable populations to EDC exposures. Early development requires precise timing of hormone action to promote proper growth of tissues and organs, and EDCs can interfere with the endogenous activities of these hormones. In addition, the enzymes involved inxenobioticbiotransformationand the processes required to eliminate these compounds are not fully developed in the fetus or neonate3)4).The women and children who affect relatively vulnerable need the risk perception of EDCs.

This study was aimed at children, pregnant women, and parents conducting environmental hormone related education and producing the educational program. Third graders in elementary school in Nowon-gu, Seoul, Korea had been linked educational program tosenior school(4th grade, 5th grade), and the surveys had been conducted for children in order to examine the extent of perception of the environmental hormone and related academic achievement by utilizing environmental health education.

Materials and Methods

Risk factors about EDCs were investigated for general public. The perception survey method of EDCs was used to investigate. The questionnaire of risk perception was used consisting of 7 parts; selected questions(SQ), quality of life(A), general perception of EDCs(B), risk perception of EDCs(C), exposure perception of EDCs(D), respondents health condition(E), and questions for statistical treatment(DQ). Measuring variables of risk perception of EDCs(C) were dangerousness, spontaneity, controllability, fear, familiarity, scientific knowledge, and personal knowledge.

The survey of risk perception of EDCs was conducted among 2,000 public people. The survey was targeted at men and women aged from 15 to 59 years across the country (Republic of Korea) and included major impact group about EDCs. The main impact group comprised of 435 married fertile women (20~49years), 155 mothers raising infants (0~5years), 240 mothers raising school-children (6~14years).

Table 1.Main influential groups of Endocrine disrupting chemicals

The questionnaire of risk perception of EDCs was conducted by on-line. Population proportional allocation sampling of age/sex/region was performed in this study. The period of investigation was conducted from January 13 2016 until January 19 2016.

Results and discussion

The investigation of risk perception of EDCs was conducted for 2,000 national public generals, and the results from questions in the questionnaire about risk perception of EDCs for public generals were shown.

Table 2.Item of risk perception variables in this survey questionnaire

The result of dangerousness part in risk perception questionnaire of EDCs showed higher perception level; however, the results of scientific knowledge and personal knowledge parts showed relatively lower perception level.

Table 3.Regression analysis of the Fear among the seven of risk perception variables

The Fear was as high as second part among the seven of risk perception variables, and this result proves that general public is afraid of EDCs and this phenomenon is capable of affecting people's behavior.
The result from pregnant women showed that 42.4 percent of respondents was not aware of EDCs. In the investigation examining perception about EDCs for citizens in Daegu, Korea, 96.1 percent of volunteers perceived about EDCs, but showed lack of perception about sorts and influence from EDCs.
The transfer of information in the knowledge or personal knowledge is not operated well. In addition, although general public receives information of EDCs from the media such as TV, Internet, Blog, etc, they are not susceptible to comprehend the correct transmission for information. The contents development capable of providing correct information by investigating perception about EDCs is necessary.

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Table 3. Regression analysis of the Fear among the seven of risk perception variables

Coefficients[a]									
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Fraction Missing Info.	Relative Increase Variance	Relative Efficiency
		B	Std. Error	Beta					
1	(Constant)	.664	.489		1.358	.175			
	sex	.039	.052	.016	.761	.447			
	age	.013	.002	.132	5.687	.000			
	Educational Standard	.012	.023	.012	.535	.593			
	Family Outcome	.015	.016	.019	.921	.357			
	General Health Condition	.086	.077	.023	1.120	.263			
	Physical Health Condition	-.311	.094	-.071	-3.308	.001			
	Physiological Health Condition	-.186	.062	-.064	-3.007	.003			
	Quality of life	.026	.072	.008	.362	.717			
	Interest	.391	.042	.210	9.303	.000			
	Exposure Condition	.201	.045	.094	4.508	.000			
	Information	.090	.054	.035	1.657	.098			
	Bisphenol-A by Media	.282	.056	.145	5.010	.000			
	Pthalate by Media	.126	.053	.066	2.359	.018			
	Contact Degree by Institution	.005	.029	.005	.166	.869			
	Contact Degree by Media	.038	.039	.031	.977	.329			
	Contact Degree by Meeting	.080	.026	.092	3.130	.002			
	Reliability Degree by Institution	-.032	.035	-.029	-.913	.361			
	Reliability Degree by Media	-.087	.046	-.070	-1.882	.060			
	Reliability Information by Meeting	.024	.028	.026	.871	.384			
	Risk Information by Institution	.016	.033	.015	.480	.631			
	Risk Information by Media	.015	.041	.012	.363	.717			
	Risk Information by Meeting	-.007	.024	-.009	-.306	.759			
	Promotional Materal by Media	.147	.032	.114	4.679	.000			

a. Dependent Variable