

Prediction Model for Facilitating of Multicultural Family Support Center in Korea

Haewon Byeon¹, Seong-Hun Yu², Hee-Kyung Jin³, SungHyouon Cho^{3*}

¹ Dept. of Speech Language Pathology & Audiology, Nambu University, Gwangju, South Korea, byeon@nambu.ac.kr

² Dept. of Physical Therapy, Gwang-ju trauma Center, Gwangju, South Korea, Corresponding Author: epqmftm9@hanmail.net

³ Dept. of Physical Therapy, Nambu University, Gwangju, South Korea, Corresponding Author: geriatricpt1@naver.com, epqmftm9@hanmail.net

Abstract. This study investigated deciding factors for the use of Multicultural Family Support Centers (MCFSC) by using Classification and Regression Trees (CART) algorithm and. Data were from the A Study on the National Survey of Multicultural Families 2012. Subjects were 281,606 persons aged over 19 years. As the result of development of prediction model using CART algorithm, original nationality, sex, satisfaction with the relationship with children, occupation and region of residence were significant predicting factor for the decision to use MCFSC and among them; the most overriding prediction factor was original nationality. In order to vitalize the use of MCFSC based on this prediction model, continuous management is required of groups with no experience of using MCFSC.

Keywords: complex sample regression analysis, cluster sampling, national survey

1 Introduction

Together with quantitative increase of MCFSC, necessity of meticulous management of participating subjects and effects of service has been emphasized [1]. Nevertheless, studies on MCFSC so far conducted are mostly either limited to results of a single region or remaining on operational achievement [2-3].

As the role of MCFSC is very important for successful adaptation and desirable integration of multicultural families to society [4], it is necessary to analyze deciding factors of vitalization of MCFSC from the perspective of consumers.

This study explores prediction factors for using MCFSC of multicultural families based on CART algorithm by using representative epidemiological data and, based on the developed prediction model, provides basic materials for the vitalization of MCFSC.

* Corresponding author

2 Methods

2.1 Subjects

Data source of this study was 2012 National Survey of Multicultural Families (NSMF) on multicultural families living in Korea. This study analyzed 281,606 adults over the age of 19 (56,273 males, 225,333 females) among a total of 283,224 marriage immigrants and naturalized persons as of 2012.

2.2 Measures

Outcome was defined as experience of having used MCFSC (do not know or have not used MCFSC, have used MCFSC).

Explanatory variables were included as age, gender, final education, residing place, Marital status, relationship satisfaction in families, relationship satisfaction with children, satisfaction with the relationship with spouse's parents, satisfaction with the relationship with spouse's brothers and sisters, Subjective Health Status, Life satisfaction, National origin, Acquisition of Nationality in Korea, experience of social discrimination, and whether or not being engaged in economic activities.

2.3 Statistical analysis

Chi-square test was used to compare the variables in those who have used MCFSC and those who have not used MCFSC.

When the related factors of experience of having used MCFSC were identified in the chi-square test, the related factors of smoking were statistically classified and a prediction model was established, using Classification and Regression Trees (CART) algorithm.

All analysis used MINITAB version 16 (Minitab Inc., State College, Pennsylvania, USA).

3 Results

General characteristics of subjects and factors related to experience of having used MCFSC are presented in Table 1. As the result of chi-square test, experience of having used MCFSC has statistically significant difference in age, final education, relationship satisfaction in families, relationship satisfaction with children, satisfaction with the relationship with spouse's parents, satisfaction with the relationship with spouse's brothers and sisters, subjective health status, life satisfaction, national origin, acquisition of nationality in Korea, experience of social discrimination, and economic activities ($p < 0.05$).

As the result of constructing statistical classification model using CART algorithm after including variables set as factors related to the level of using MCFSC through chi-squared test, factors having significant effect were national origin, gender, relationship satisfaction with children, economic activities, and residing place. The most preferentially involved predictor was national origin.

Table 1. Characteristics of subjects and factors related to experience of MFSC, n (%)

Variables	Experience of MFSC		p
	No (n=185,780)	Yes (n=95,826)	
Sex			<0.001
Male	52,194 (92.8)	4,079 (7.2)	
Female	133,586 (59.3)	91,747 (40.7)	
Age			<0.001
19-29	33,258 (44.1)	42,122 (55.9)	
30-39	53,794 (62.5)	32,219 (37.5)	
40-49	54,090 (76.2)	16,905 (23.8)	
50-59	27,586 (88.7)	3,511 (11.3)	
60-69	11,614 (93.4)	827 (6.6)	
70+	5,438 (95.7)	244 (4.3)	
Residing place			<0.001
City	159,150 (72.0)	61,866 (28.0)	
Country	26,630 (44.0)	33,961 (56.0)	
Final education			<0.001
Elementary school and lower	17,407 (64.6)	9,522 (35.4)	
Middle school	39,103 (62.9)	23,060 (37.1)	
High school	84,172 (66.9)	41,661 (33.1)	
Over university	45,098 (67.6)	21,583 (32.4)	
Marital status			<0.001
Single	7,639 (94.1)	481 (5.9)	
Married	162,535 (63.6)	92,910 (36.4)	
Widowed	4,421 (83.5)	872 (16.5)	
Divorced or separated	11,185 (87.7)	1,564 (12.3)	
Satisfaction with the relationship with spouse			<0.001
Satisfaction	135,699 (66.5)	68,356 (33.5)	
Fair	37,757 (62.1)	23,033 (37.9)	
Complaints	4,685 (54.2)	3,956 (45.8)	
Relationship satisfaction with children			<0.001
Satisfaction	85,703 (55.7)	68,229 (44.3)	
Fair	18,272 (67.4)	8,851 (32.6)	
Complaints	2,598 (65.2)	1,387 (34.8)	
Satisfaction with the relationship with spouse's parents			<0.001

Satisfaction	74,819 (62.6)	44,747 (37.4)	
Fair	43,670 (60.1)	29,032 (39.9)	
Complaints	9,098 (55.7)	7,230 (44.3)	
Satisfaction with the relationship with spouse's brothers and sisters			<0.001
Satisfaction	86,465 (65.5)	45,496 (34.5)	
Fair	555,691 (60.7)	36,005 (39.3)	
Complaints	11,749 (65.1)	9,049 (43.5)	
Subjective health status			<0.001
Good	109,636 (63.0)	64,320 (37.0)	
Fair	52,363 (67.8)	24,853 (32.2)	
Poor	23,781 (78.1)	6,653 (21.9)	
Life satisfaction			<0.001
Good	91,996 (64.1)	51,458 (35.9)	
Fair	77,859 (67.3)	37,758 (32.7)	
Poor	15,925 (70.7)	6,611 (29.3)	

4 Conclusion

Based on the result of the study, to support successful social adaptation of multicultural families, it is necessary to induce married immigrants from North America and Eastern Europe to actively participate in programs of MCFSC.

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