

Actor and Partner Effects of Self-Efficacy and Social Support on the Colorectal Cancer Screening Behavior of Husbands and Wives: Based on the Actor-Partner Interdependence Model

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Abstract

Background/Objectives: As the healthcare behavior of husbands and wives has effects on their spouse, it would be necessary to examine the dynamic relationship of husband and wife. This study aims to verify the actor and partner effects of self-efficacy and social support of husbands and wives on their colorectal cancer(CRC) screening behavior.

Method/Statistical Analysis: This study surveyed total 249 pairs of husband and wife. The SPSS 24.0 and AMOS 24.0 were used for the data analysis.

Findings: The self-efficacy of husbands and wives showed the actor effects on the CRC screening behavior while the self-efficacy of wives showed the partner effects on the CRC screening behavior of their husbands. The social support of husbands and wives had the actor and partner effects on the CRC screening behavior.

Improvements/Applications: In order to increase the CRC screening rate, it would be necessary to encourage the husbands and wives to participate in the self-efficacy enhancement programs, to understand the level of family support and problems and also to strengthen the family support. The model verified based on the APIM in this study provided the empirical model that could show the dynamic relationship of husband and wife in relation to the CRC screening behavior in the multilateral divisions, which could be used as the theoretical basis

Keywords: *Colorectal Cancer Screening, Health Behavior, Self-Efficacy, Social Support, Actor-Partner Interdependence Model, Spouses*

Introduction

The incidence of colorectal cancer(CRC) in Korea is ranked No.1 in the world^[1]. Emphasizing the necessity of early screening to decrease the incidence of cancer or death by cancer. However, according to the national cancer screening rate in 2019, the CRC screening is about 28%, which is lower than a neighboring country, Japan(41.4%)^[2]. Meanwhile, in case of CRC, the precancerous polyps could be early detected/ treated through the early screening and the incidence of CRC could be remarkably decreased. Thus, it would be

needed to seek for the measures for the improvement of screening rate.As the factors having great effects on the CRC screening behavior, the sociodemographic characteristics, psychological characteristics and partner effects have been reported^[3]. Especially, depending on the marital status, the cases of having a spouse show the higher screening rate than the cases of having no spouse. Based on this, it would be needed to intervene in their partners to improve the cancer screening rate^[4]. Despite the limited researches on the effects of marital relationship on the CRC screening behavior, it has been reported that the healthcare behavior of husbands and wives has effects on their spouse^[5]. Also, the people in the interdependent relationship just like husband and wife, are highly possible to exchange the effects on the mutual health behavior, so that the necessity to analyze

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the data in the unit of husband and wife is emphasized^[6].

As a method to analyze the interrelation of people in the interdependent relationship such as married couple or unmarried couple, Kenny^[7] suggested the Actor-Partner Interdependent Model (APIM). In this model, the effects of actor's independent variables on the actor's dependent variables are called 'actor effects' while the effects of partner's independent variables on the actor's dependent variables are called 'partner effects'. In the marital relationship, the same environment, financial resources and social relationship are shared and this shared environment works as a variable that could be beneficial or harmful to health in accordance with the environment and health behavior of spouse.

Thus, this study aims to verify the actor and partner effects of self-efficacy and social support on the CRC screening behavior of husbands and wives, by applying the APIM to the husbands and wives of CRC screening. The results of this study could provide the empirical model that could examine the dynamic relationship of husband and wife in relation to the CRC screening behavior in the multilateral divisions, which could be also used as the basic data for the improvement of CRC screening rate.

Method

Research Design

This study is a descriptive causality research for verifying the actor and partner effects of self-efficacy and social support on the CRC screening behavior of husbands and wives of CRC screening based on the APIM.

Research Subjects

The concrete standards for the selection of subjects were first, the husbands and wives whose ages were both 50 or more, second, the husbands and wives who understood the objectives of this study and agreed on the participation in this study. As the husband and wife was the unit of analysis in this study, the husbands and wives suitable for the standards of selection were selected through the convenience sampling. After distributing the questionnaires to total 260 pairs, the questionnaires were collected from 249 pairs (249 husbands, 249 wives).

Measurement

Self-Efficacy

The self-efficacy was measured by modifying/complementing the contents of breast cancer of the Champion's Health Belief Model Scale (CHBMS) [8] into the contents of CRC screening. Composed of total ten questions, each question was measured by the 5-point scale. The higher score means the higher self-efficacy. Regarding the reliability of the tool, in the moment of development, the Cronbach's α was .87. In this study, the Cronbach's α was .90.

Social Support

The social support was measured by using the Multi-dimensional Scale of Perceived Social Support (MSPSS) developed by Zimet et al., [9]. As the MSPSS is composed of family support, peer support and special support from meaningful others, it has total 12 questions including four questions in each area, based on the 5-point scale. The higher score means the better social support. Regarding the reliability of the tool, in the moment of development, the Cronbach's α was .83. In this study, the Cronbach's α was .86.

CRC Screening Behavior

According to the Korean National Cancer Screening Guideline, this study verified the matter of conducting the fecal occult blood test at an interval of one year targeting the husbands and wives in their 50 or up and also conducting the colonoscopy or the double contrast barium test in case of abnormal findings.

Data Collection

This study was conducted after approval of the University Research Ethics Committee (2013-0041-1). This study collected data at community service centers located in Seoul and Gyeonggi-do from December 1st 2013 to March 30th 2014. In case when the husbands and wives used the organization together, they were asked to fill out each questionnaire for husband and wife and then the questionnaires were collected on the spot. In case when only one spouse of a married couple used the organization, an envelop including a research explanation and questionnaires was provided and then the spouse was asked to bring it back on the appointed day after filling them out at home. It took about ten minutes to finish the questionnaire. To analyze the couple relationship data in the unit of husband and wife, this study only used the anonymized code that could verify the husbands and wives whose personal information were not exposed.

Data Analysis

The collected data was analyzed by using the SPSS WIN 24.0 and AMOS 24.0 Program. The actor and partner effects of self-efficacy and social support on the CRC screening behavior of husbands and wives were analyzed through the path analysis while the goodness-of-fit of the model was verified through GFI, AGFI, CFI, PGFI, PNF and RMSEA.

Result and Discussion

1. General Characteristics of Husbands and Wives of CRC Screening

In the age of subjects, the husbands were 58.54 years old while the wives were 57.64 years old($t=1.54, p=.102$). Regarding the private insurance, the 67% of husbands and the 70% of wives had it($\chi^2=1.56, p=.244$). In the family history of cancer, the 55% of husbands and the 53% of wives had no history of it($\chi^2=.10, p=.817$).

Regarding the monthly income of family, 3million won or up was 51% while less than 3million won was 49%.

2. Differences in the Self-Efficacy, Social Support and CRC Screening Behavior of Husbands and Wives of CRC Screening

[Table 1] show that the differences in the self-efficacy, social support and CRC screening behavior of husbands and wives of CRC screening. In the self-efficacy of subjects, the husbands were 3.48 ± 0.45 and the wives were 3.74 ± 0.34 , so that the wives were statistically significantly higher than the husbands($t=2.39, p=.011$). Regarding the social support, the husbands were 50.36 ± 5.67 and the wives were 52.73 ± 4.58 , so that the wives were statistically significantly higher than the husbands($t=2.43, p=.015$). In the matter of CRC screening behavior, the 59% of husbands and the 63% of wives conducted it, which did not show significant differences($\chi^2=0.19, p=.186$).

Table 1. Self-Efficacy, Social Support and CRC Screening Behavior of Husbands and Wives

| Variables | Husbands (n=249) n(%) or M±SD | Wives (n=249) n(%) or M±SD | t or X2 | p |
|---------------------------|-------------------------------------|----------------------------------|---------|------|
| Self-Efficacy | 3.48±0.45 | 3.74±0.34 | 2.39 | .011 |
| Social Support | 50.36±5.67 | 52.73±4.58 | 2.43 | .015 |
| Behavior of CRC Screening | 146(59) | 158(63) | 0.19 | .186 |

CRC= Colorectal cancer.

3. Actor and Partner Effects of Self-Efficacy and Social Support on the CRC Screening Behavior of Husbands and Wives of CRC Screening

The path analysis was conducted to analyze the actor and partner effects[Figure 1].The goodness-of-fit of the model was GFI=.92, AGFI=.88, CFI=.97, PGFI=.67, PNF=.77 and RMSEA=.06, which showed the relatively fine goodness-of-fit. In this study, the actor and partner effects of husbands and wives are as follows. First, even though the self-efficacy of husbands had the actor effects on their own CRC screening behavior($\beta=.66, p=.012$), it had no partner effects on the CRC screening behavior of their wives($\beta=.14, p=.285$). Second, the social support of husbands had the actor effects on their own CRC screening behavior($\beta=.48,$

$p<.001$)and also the partner effects on the CRC screening behavior of their wives($\beta=.45, p=.003$). Third, the self-efficacy of wives had the actor effects on their own CRC screening behavior($\beta=.51, p=.021$) and also the partner effects on the CRC screening behavior of their husbands($\beta=.37, p=.015$). Fourth, the social support of wives had the actor effects on their own CRC screening behavior($\beta=.41, p=.014$) and also the partner effects on the CRC screening behavior of their husbands($\beta=.34, p=.005$). The social support of husbands and the self-efficacy($\beta=.36, p=.023$) and social support($\beta=.52, p<.001$)of wives were influencing each other and this model explained the CRC screening behavior of husbands and wives as 42.1% and 33.4% respectively.

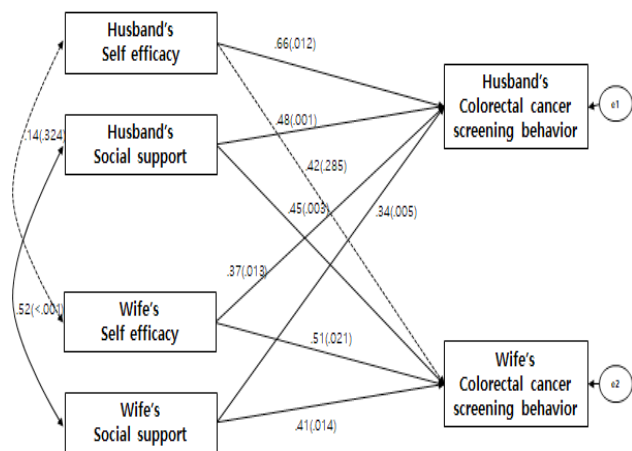


Figure 1. Actor and Partner Effects of Self-Efficacy and Social Support on the CRC Screening Behavior of Husbands and Wives

Discussion

This study aimed to verify the actor and partner effects of self-efficacy and social support on the CRC screening behavior of husbands and wives of CRC screening by applying the analysis on the couple relationship data based on the APIM. The discussions of the results of this study are as follows.

First, in the husbands and wives of CRC screening, the self-efficacy of husbands and wives had the actor effects on their own CRC screening behavior while the self-efficacy of wives had the partner effects on the CRC screening behavior of their husbands. As a belief in his/her own ability to successfully achieve a certain matter when facing a certain matter or situation, the self-efficacy is one of the factors having direct effects on the intention and behavior^[10]. According to a research by Manne et al.,^[6] the attitude and behavior of a spouse had direct effects on the intention of CRC screening behavior of the other spouse and the experience or behavior of the other spouse was considered for the decision-making of CRC screening behavior. Such results accord with the results of this study verifying that the self-efficacy of husbands and wives is interdependently working. Thus, this result supports the hypothesis of APIM explaining that the data should be collected and analyzed together. Meanwhile, in this study, the self-efficacy of wives had the partner effects on the CRC screening behavior of their husbands. This provides the information about who creates the bigger dynamics in the relationship between husband and wife. Especially, based on the study results reporting that wives are playing an important decision-making role in the health behavior of husbands and

wives^[11], women are supporting the decision-making for the health behavior of husbands and wives.

Based on the results of this study, it would be necessary to have the measures for the enhancement of self-efficacy of husbands and wives, in order to improve the CRC screening rate. Especially, the husbands and wives should be encouraged to directly participate in the intervention program helping them to control their own health to increase their self-efficacy. Also, as the self-efficacy of wives has effects on the CRC screening behavior of their husbands, it would be necessary to promote the direct motivation through the relationship adjustment and encouragement from spouse by systematically operating the programs participated by husbands and wives.

Second, in the husbands and wives of CRC screening, the social support of husbands and wives had the actor and partner effects on their own CRC screening behavior. As the important social support resources, the family, colleagues, or friends have positive effects on the early screening and health behavior for the effective prevention of cancer and also work as an element that makes it possible to conduct the behavior for the health enhancement. Especially, verifying the social support in the subjects of cancer screening is helpful for understanding the effects on health condition, health behavior and health-related decision. Moreover, the subjects in a pair based on a close relationship like husband and wife are highly possible to influence each other, so that it is important to verify their relationships. This study verified the important role of social support of husbands and wives in the voluntary preventive behavior. Therefore, when the social support of husbands and wives is high, it could have positive effects on their health behavior, which could be contributing to the decision of screening behavior. Thus, it would be needed to develop the intervention programs that could increase the social support of husbands and wives.

Bandura^[10] explained that sharing the social contexts like marriage would have effects on the mutual motivation, self-efficacy and health behavior. Therefore, in the close interdependent relationship like husband and wife, the self-efficacy and supportive relationship of spouse play an important role in the mutual decision-making. Thus, in order to improve the CRC screening rate, it would be necessary to understand the level of family support and problems through the continuous counseling with a medical team and also to provide the

intervention for strengthening the family support.

Through the discussions above, the effects of self-efficacy and social support on the enhancement of CRC screening rate of husbands and wives were verified. Such results of this study could be used as the basic data for the development of intervention programs for enhancing the CRC screening rate.

Based on the results of this study, the suggestions for the follow-up researches could be made as follows. First, it would be necessary to have the researches on the development of programs including the contents of improving the self-efficacy and social support of husbands and wives of CRC screening and the verification of effects. Second, there should be the researches including diverse variables that could have effects on the CRC screening besides the variables verified in this study.

Conclusion

This study aimed to verify the actor and partner effects of self-efficacy and social support on the CRC screening behavior of husbands and wives of CRC screening. In the results of the analysis, the self-efficacy of husbands and wives had the actor effects on the CRC screening behavior while the self-efficacy of wives had the partner effects on the CRC screening behavior of their husbands. The social support of husbands and wives had the actor and partner effects on the CRC screening behavior. Therefore, to enhance the CRC screening rate, it would be more effective to verify the social support system of husbands and wives and also to plan/carry out the programs that could improve the self-efficacy in the unit of husband and wife. The model verified on the basis of APIM in this study could become the theoretical basis for the development of programs for improving the CRC screening rate by verifying the actor and partner effects of husbands and wives of CRC screening.

Ethical Clearance: IRB 2013-0041-1

Source of Funding: Self

Conflict of Interest: Nil

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