
Market and Non-Market Activities and Its Effect on Health from the Perspective of the Allocation of Time

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The relationship between one's occupation and his or her health has extensively been studied in the past. The link between the two have mostly been explained by the hypothesized and sometimes empirically tested impact of the type of activities required of one's occupation on his/her health. However, impacts of non-market activities on health should be included for an more comprehensive study of the subject. To take account of impacts on non-market activities, this study looks at the intra-family dynamics in terms of each member's role played as revealed by his or her allocation of time in market and non-market activities.

Specifically, based on Becker's theory of the allocation of time and Lancaster's new theory of consumer behaviour, the individual family's activities are classified into three types of activities: (1) income earning and other market activities in the economy; (2) leisure, consumption and miscellaneous activities; (3) household (production) chores. The study measures the proportionate amount of time spent for each category of activities. Then, structural relation between major determinants of health and allocation of time is investigated.

A typical approach to determinants of knowledge, attitude, and belief about health has been to study the relationship between health and environmental or contextual variables from the economic point of view. This study however, takes a unique approach, which is different from previous studies.

First, by treating the socioeconomic status of each family as the contextual variables, it examines how the market and non-market activities of each member of the family as reflected by his or her allocation of time, shape the perception about the relative cost-effectiveness of various inputs for health.

Second, within the context of the family's socioeconomic status, it examines the question of how the knowledge and the relative ease or difficulty of financial, physical and cultural access to various types of health facilities are acquired.

Third, socioeconomic and cultural contextual dependency is investigated not only as a co-determinant of health behaviour but also as an environmental factor which influences the relationship between the allocation of time and health behaviour.

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I. Introduction

The relationship between one's occupation and his/her health has extensively been studied in the past. The link between the two have mostly been explained by the hypothesized and sometimes empirically tested impact of the type of activities required of one's occupation on his/her health. The focus of such previous studies are obviously placed on how one's professional or market activities affect his/her health.

If one were to study the impacts of one's daily activities on his/her health, obviously those of one's daily non-market activities have also to be examined. This study proposes to investigate the impacts of one's market and non-market on his/her health. One's activities are classified and measured by the allocation of one's time in various daily routine activities.

Specifically, based on Becker's theory of the allocation of the time(1965) and Lancaster's new theory of consumer behavior(1966), the individual family member's activities are analyzed by asking and by observing the allocation of time by each member of the family, mainly, among three types of activities:

- (1) Market activities, namely, income earning activities in the economy;
- (2) Leisure, consumption, recreation, rest (including that of health care), activities, etc.;
- (3) Household(production) chores such as cooking, cleaning, heating, etc.

The allocation of the time is hypothesized to influence the individual family member's health because how one spends his or her time deter-

mines the family income(resource), consumption patterns including nutritional and health behavior and life style.

It also reveal the relative status and role of each individual member in the family. Family dynamism, family status and family activities have recently also been found to significantly influence the health of each member of the family.

The health status to be examined is the general health condition of the family and the difference in physical condition among the individual members of the same family, such as that between the husband and wife, adults and children, and between other female and male members of the family.

In the past, the studies of health belief, behavior and status of the family concentrated on the socioeconomic and cultural characteristics as their determinants. The focus of this study however, is placed to analyzing how and to what extent the market and non-market activities of the individual member of family determine his or her health knowledge, belief, behaviour and status, in the given socioeconomic, cultural, demographic and geographic context.

The objectives of this study are mostly directly or indirectly to test the hypotheses contained implicitly or explicitly in the conceptual framework of analysis presented below. They are:

- (1) To analyze how and to what extent intra-family division of labour, their market and non-market activities, and the perception about the role and the status of each member of family, influence the perception and attitude about the relative cost-effectiveness of alternative inputs

for health.

(2) To examine how and to what extent the above relationship is determined by the socio-economic, cultural and demographical context in which the above relationship operates.

(3) To investigate how and to what extent the perception of the relative cost-effectiveness, cost of various inputs for health are actually translated into the utilization of health care in the given socioeconomic context.

(4) To study how and to what extent, the market and non-market activities of each member of the family (intra-family division of labour) and the perception of the relative cost-effectiveness of various inputs for health, determine health status independently and interacting with each other in the given socioeconomic context.

(5) To examine how and to what extent, the family's knowledge of and the access to various health facilities lead its member's a particular pattern of utilization of particular health facility in the given socioeconomic context.

II. Basic Framework

1. Conceptual Model

The conceptual framework of analysis indicates how this study is conceived and provides a theoretical underpinning for the study and hypotheses formulation. It also provides the rationale for this study.

The framework relies heavily on the previous studies of the subject. However, as we can be seen from its diagrammatical exposition (Figure

1), it also possesses several novel features presented which differentiate this study from the usual household activities and health behavior conducted in the past.

The most important new approach which this study takes is the fact that it looks at the intra-family dynamics in terms of each member's role played as revealed by his or her allocation of time in market and non-market activities. Since the path-breaking article by Gary Becker in 1960 (Becker 1960), how one allocates his/her time has become a pivotal variable in studying consumption and working behaviour in economics.

However, in the health field, it has been relatively neglected. The main feature of this study, as shown in the framework of analysis, is to include the allocation of time both in market and non-market time as the salient variable determining one's health by influencing one's health behaviour. The allocation of the time is hypothesized to influence the individual family member's health because how one spends his or her time determines the family income (resource), consumption patterns including nutritional and health behavior and life style.

Another distinctive feature of the framework is that, as mentioned before, it treats the indicators of socioeconomic and cultural characteristics of each family as contextual variables, rather than as independent variables directly influencing health perception and behavior. The question examined is, for an individual of family of the same or similar socioeconomic cultural background, how one's allocation of time determines his/her health behavior and health. Socio

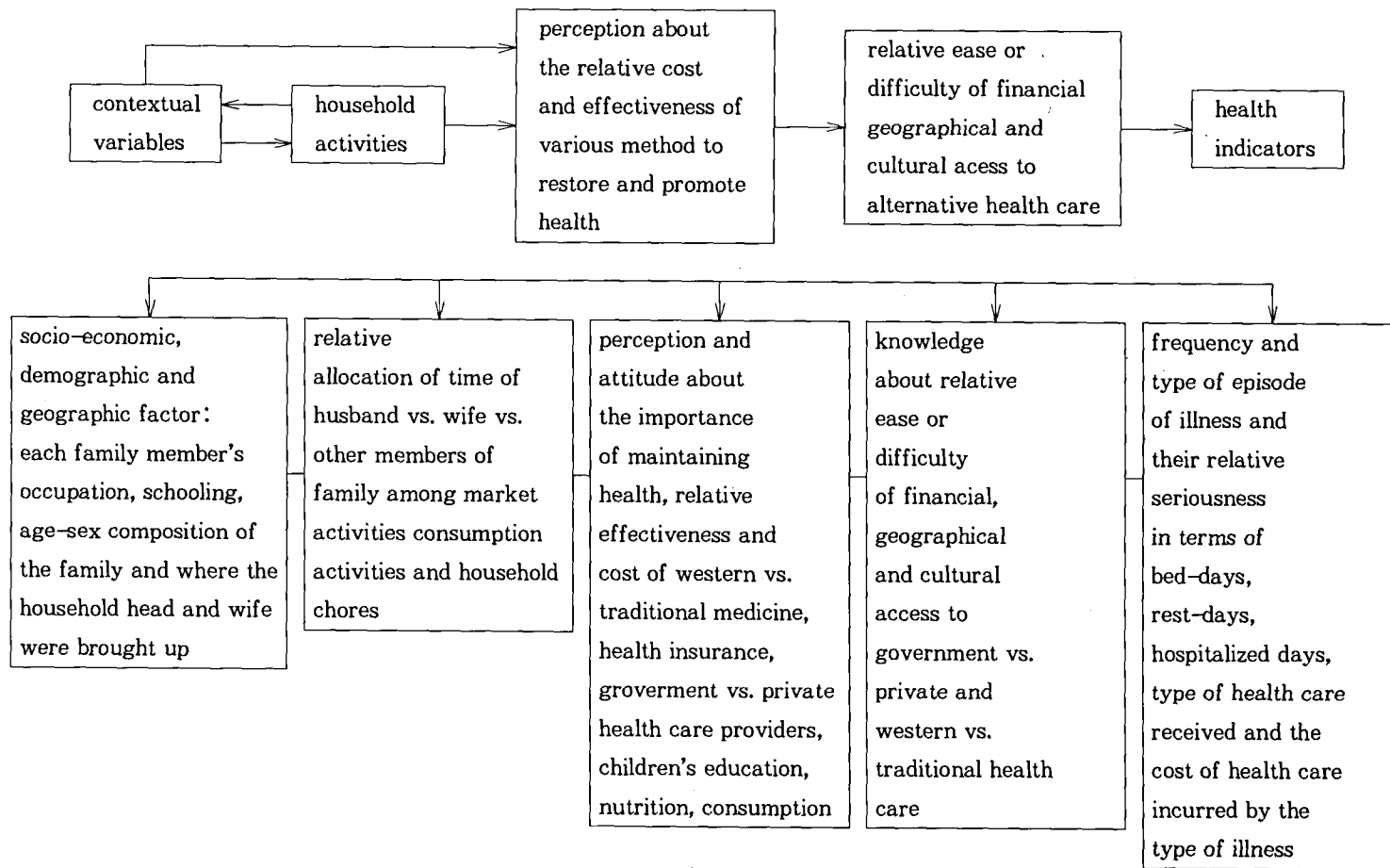


Figure 1. Schematic Presentation of the Conceptual Framework of Analysis

-economic indicators are also analyzed as the exogenous variables which influences the allocation of time of the individual member of a family.

In examining health behaviour, the conceptual framework shows that this study considers one's health behaviour as being based on his/her perception. The health perception is examined to find out how the individual member of family perceives various types of health care in terms of its relative cost-effectiveness. The individual's health perception is also analyzed how he/she perceives other factors indirectly hypothesized to affect health, such as education, nutrition and economic behaviour.

Finally, as mentioned before, the framework shows that in translating health perception into health seeking behavior, the individual member of a family considers the actual access to health promoting input not only in physical terms but also in financial and cultural terms.

2. Major Hypotheses

The hypotheses formulated to be tested in the purposed study are based on the above conceptual framework and have already been revealed implicitly or explicitly in the discussion of the framework and objectives. Specially, they are:

(1) The intra-family division of labour, as measured by the allocation of time by the wife vs. husband and other members of family among the market, non-market and household chores, influences or determines health belief, behaviour and status in the given socioeconomic context.

(2) The socioeconomic, cultural, demographic and geographic context influences or determines the way in which the market and non-market activities of each member of the family influences or determines health belief, behavior and status.

(3) The intra-family division of labour influences or determines the family's perception of the perceived relative cost-effectiveness of various inputs for health, which in turn, determines the utilization of a particular inputs or inputs in the given socioeconomic context.

(4) The extent to which the health belief and /or cost of various inputs for health influence (s) or determine(s) the utilization of a particular health input(s) in the given socioeconomic context depends, to a significant extent, on the knowledge of and the relative ease of the access to the various health facilities.

3. Data and Methodology

The criterion of selecting sample population is the similarities in household structure and diversity in the contextual variables such as socioeconomic and cultural characteristics of each household. The similarity is sought by selecting relatively young families with at the least one young child. The diversity is sought in selecting households in three distinctive areas, namely, urban upper-middle income area, urban low income area and rural (low income) area.

For the household survey, the households in three groups of Enumeration Districts (E.D.) were surveyed. Each group contained about 150 households with at the least one young child.

Thus, total sample size is 450 households. The E.D. is the smallest district constructed by the National Statistical Office(NSO) in Korea where the homogeneity of population within each E.D. in many key variables are sought. There are about 147,000 E.Ds in the nation, each containing about 65 to 75 households.

Three types of information are sought through the household survey. First, we sought the information on the family's socioeconomic, demographical characteristics.

Second, the allocation of time of each member of the family during the past one week was estimated by having the wife and husband to keep a brief diary of many routine activities of them-

selves and their children and parents for at the least one week, of their parent live together with them. Third, the information of the perception, attitude and knowledge about the role and status of each family member, relative cost-effectiveness of various inputs for health, relative ease or difficulty of financial, physical and cultural access to various types of health facilities were sought.

The survey was conducted using structured questionnaire which include the allocation of time check list in the form of diary of routine activities. The questionnaire has been finalized after consulting with questionnaire making experts and after conducting a pre-test.

Table 1. Major Variables Related to above Three Types of Information in Questionnaire

Type of information	Variables
Socioeconomic, Demographic	Education level, Income level, Occupation, Sex, Age, Health status, Size of house, Nuclear family
Allocation of Time	Market activity, Leisure activity, Household chores
Perception, Attitude, and Knowledge	Efficiency of western medicine, Ease of financial access to health facilities, Ease of waiting time for medical treatment, Efficiency of oriental medicine, Knowledge and practice about health, Sanitary condition of home, Dietary pattern, Importance of medical examination, Family happiness

III. Major Findings

Since heads of most households are male and employed, the allocation of their time do not vary much among themselves. On the other hand, the analyses show that the housewife's allocation of their time vary a great deal among

themselves. In addition, the housewife's allocation of their time are found to have significant impacts on key variables affecting family's health. Therefore, the focus of the analyses is placed on studying how the allocation of the mother's time affects the family health through influencing the factors hypothesized as deter-

mining one's health.

The main tool of the statistical analysis used is path analysis. Initially, all the variables representing the allocation of mother's time are included in the study of its impacts on all the variables hypothesized as determining family health. In addition, all contextual(exogeneous) variables, mainly representing socioeconomic and cultural status of the mother and her family, are also included in the analysis to examine what role the contextual dependency plays.

Out of all the path analysis conducted, five of their results are chosen as all the variables chosen are found to have statistically significant impacts. Only these results are presented below as Figure 5-1 through 5-4.

1. The Impact of Allocation of Father's Time on His Health (Figure 5-1)

Depending on the combination of variables included in the path analyses, impacts of allocation of one's time on health are found to take place through different variables at varying levels of significance. For example, Figure 5-1 shows that income level affects the allocation of the father's time for doing household chores and leisure activities. Then, the proportion of his time spent for household chores influences the family's choice of health care by its type.

Apparently, the father who helps his wife in household chores more than others prefers Western medicine over types of health care. On the other hand, the father who spends more time for leisure activities than others have the

family whose dietary pattern is less desirable than other families.

In examining how exogeneous(contextual) variables influence the family's health, the father's occupation is found to influence the choice of type of health care. Proportionately a greater number of skilled workers are found to prefer Western medicine over other health care than other workers. In addition, the father whose educational achievement is rated low(elementary schooling only) has less knowledge about health care than more educated fathers. Finally, the level of father's educational achievement also influences whether family life in general is rated as a happy one or not. As expected, proportionately a greater of number of families with college educated fathers are rated as leading a happier family life than those with less educated fathers.

As shown in the conceptual framework of analysis, all key variables hypothesized to influence health are found to do so as in the ways as hypothesized. First, those who have a better knowledge about health care and practice in are found to be more likely to lead a healthy life than others. Second, those who believe that Western medicine is more efficient than other types of health care are more likely to lead a healthy life than others. Third, the happiness of family life, sanitary condition of home and dietary patterns are all found to significantly affect the (father's) health.

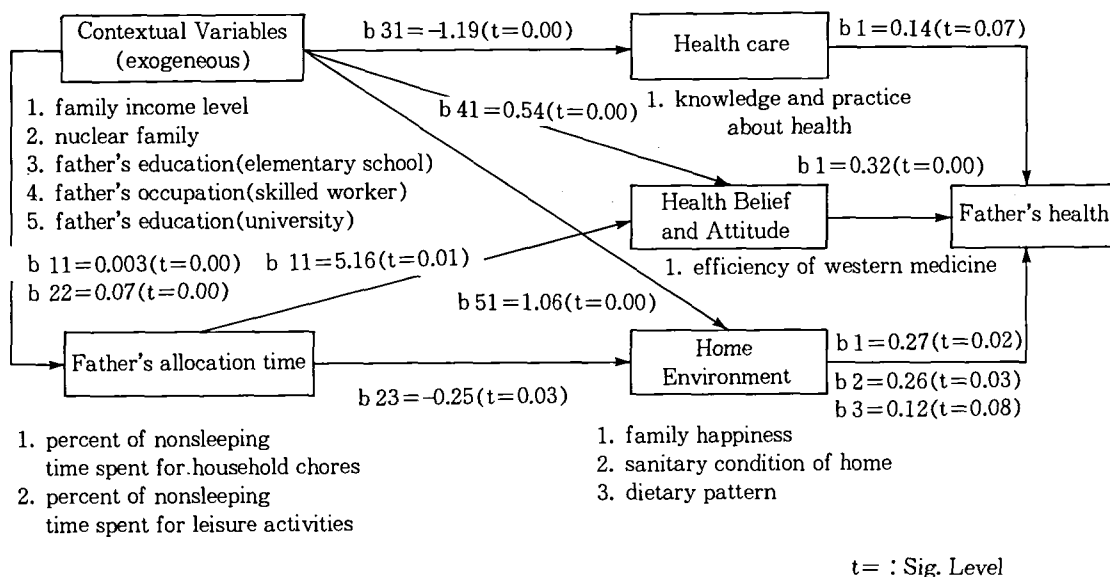


Figure 5-1 Impacts of the Allocation of Father's Time on His Health Through the Factors Hypothesized as Determining Health, given Contextual Variables Chosen-Path Analysis

2. The Impacts of Allocation of Mother's Time on Her Health (Figure 5-2)

Given the socioeconomic and cultural context, how the allocation of mother's time influences her health through various factors hypothesized as determining health, is analyzed using path analysis again.

The result is somehow more straightforward than that obtained for the father's case. Previously, those exogeneous (contextual) socioeconomic and cultural variables, which are found to exert significant impacts on the hypothesized health determining variables, turned out to be variables different from the exogeneous variables influencing the allocation of time. For mother's case, the same and only three contex-

tual variables are found to influence the allocation of her time and also variables hypothesized as determining health. These three variables are the level of mother's education, her occupation and family income level.

Each of the three of socioeconomic and cultural (contextual) variables, which are found to exert a significant influence on the allocation of mother's time, turned out to influence all different measures of time allocation. The mother's education is found to influence the time spent for household chores.

The level of mother's education is also found to influence her knowledge and practices about health care. Her occupation turned out to be largely determining the sanitary condition of home. The family income level is found out to

influence choice of type of medicine, that is, upper income families prefer Western medicine over others to a greater extent than low income families.

The mother's knowledge and practices about

health care, her choice of the health care and the sanitary condition of her home are all found to significantly influence the mother's health. These findings are similar to those in the father's case.

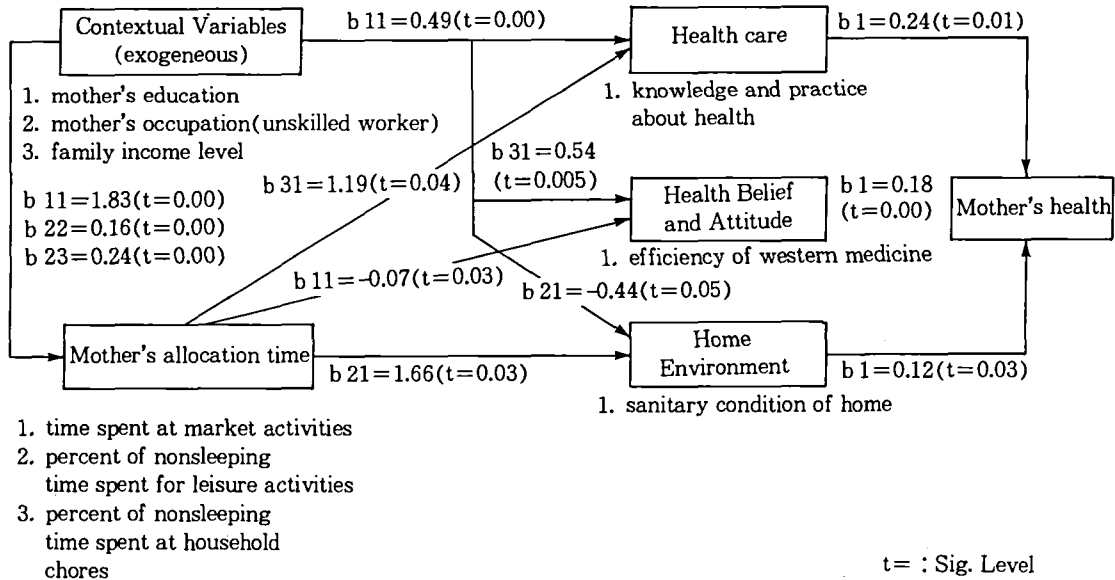


Figure 5-2 Impacts of the Allocation of Mother's Time on Health through the Factors Hypothesized as Determining Health, given Contextual Variables Chosen-Path Analysis

3. The Impact's of Allocation of Mother's Time on Family Health (Figure 5-3)

The most important findings of the statistical analysis appear to be the fact that many contextual variables exert significant influence on the allocation of the mother's time and also the fact that her allocation of time significantly influences the entire family's health by largely determining her health belief, practices and home environment.

As mentioned before, many contextual varia-

bles influence the allocation of mother's time. The level of mother's education largely determines the allocation of her time for market activities. Her husband's occupation influences the time allocated for leisure activities vis-a-vis that allocated for household chores. The mothers with unskilled job is found to spending proportionately less time for leisure activities than those with other jobs or no job.

As for the relationship between the allocation of mother's time and her health belief and practice. Proportionately a greater number of moth-

ers who spend relatively more time for market activities tend to doubt the efficacy of Western medicine than other mothers. On the other hand, mothers with higher family income are found out to prefer Western medicine over other health care more than mothers with low income. This seems to indicate that mothers with relatively low family income are more likely to enlarge in market activities to a greater extent than those with a higher income.

On the other hand, mothers who spend relatively less time for household chores tend to recognize the importance of medical examination to a less extent than mother who spend relatively more time for household chores. This is an unexpected finding because it seems to be natural to assume that mothers with more leisure

time are more likely to be better educated and, therefore, more likely to recognize the importance of medical examination for health than mothers who are busy with household chores.

As expected, with more leisure time tends to keep their home in a better sanitary condition than these with less leisure time. On the other hand, proportionately a greater number of mothers who allocate relatively more time for leisure activities are found to provide less desirable dietary pattern than mothers with less leisure time. This may be due to the fact that housemaids do food preparation in homes where the housewives spend more time for leisure activities. Then, how is one to explain the relationship between home environment and the allocation of mother's time for leisure activities?

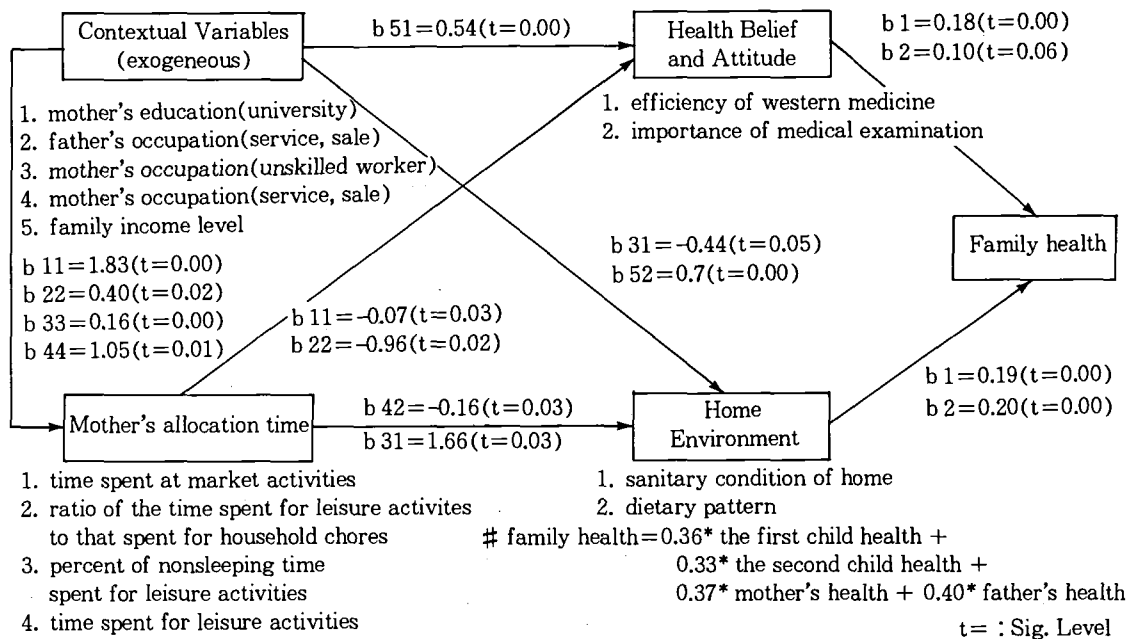


Figure 5-3 Impacts of the Allocation of Mother's Time on Health through the Factors Hypothesized as Determining Health, given Contextual Variables Chosen-Path Analysis

How do the factors hypothesized as determining health influence family health when these factors are seen as largely determined by the allocation of mother's time in the above path analysis? The statistical analyses conform the hypothesized relationship between these factors and health. The belief in efficacy of Western medicine, the recognition of importance of medical examination, sanitary home environment and more desirable dietary pattern all contribute to family's better health to a varying extent.

4. Impact's of the Allocation of Mother's Time on Her Child's Health(Figure 5-4)

It has been hypothesized from the onset of this study that mother's activities and her child or children's health is examined.

The Result confirms our unstated and most plausible hypothesis that mother's activities and her knowledge and practice about health are greatly influenced by the level of mother's educational achievement and her occupation. The path analysis shows that college educated mothers are more likely to allocate less time for market activities than less educated mothers. This is likely to be due to the fact that more educated mothers have a higher family income and, therefore, do not need a job compared with less educated mothers with a lower family income.

Among mothers with a job, those with an unskilled job are more likely to spend more time for market activities(work) than those with a skilled job. Correlatively to this, unskilled working mothers are found to be more likely to

spend less time for any leisure activities than other mothers. In the same vein, mothers with an unskilled job are found to be more likely to spend less time for household chores also than other mothers.

Unexpectedly, the path analysis shows that the only significant relationship between mother's activities and her knowledge and practice about health knowledge. As Figure 5-4 shows, mothers who spend more time in doing household chores are found to possess a better knowledge about health care than other mothers.

The relationship between mother's activities and health belief and attitude is somewhat confusing according to the result of the path analysis. The analysis shows that mothers who spend more time in market activities are found to be less likely to believe in the efficacy of Western medicine vis-a-vis other health care compared with other mothers. These busy working mothers are also found to be more likely to find it difficult to pay for medical treatment compared with other mothers.

The above association between busy working mothers and the relative lack of health knowledge and that of access to health care may be explained as attributable to the fact that busy working mothers are likely to be less educated and have a lower family income.

However, mothers who spend more time in market activities are found to be more likely to spend less time in waiting for medical treatment. The lack of time may make these mothers find a way to receive medical care quickly by going to a less crowded health facility like the government operated neighborhood health

centre.

As the previous path analysis shows, mothers who engage in leisure activities to a greater extent are more likely to have a happy and a better sanitary home environment. This must be due to the fact that mothers who belong to “leisure class” are more likely to have a high family income which enables them to keep their home clean and relatively happy without financial worries.

The relationship between the factors hypothesized as largely determining health status and the child’s health is found to confirm the finding of previous path analysis. A better knowledge and practice about health care, the

preference for Western medicine over other types of health care, the ease of financial and time access to health facility, a relatively happy and sanitary home environment—all contribute significantly to a better health of analysis. To repeat, socioeconomic and cultural variables influence one’s health through two avenues. First, they influence health by greatly influencing the allocation of one’s time among various activities. Then, how one allocates his/her time significantly influences those factors hypothesized as largely determining one’ health status. The second avenue if that these contextual variables directly influence those same factors hypothesized as determining one’s health status.

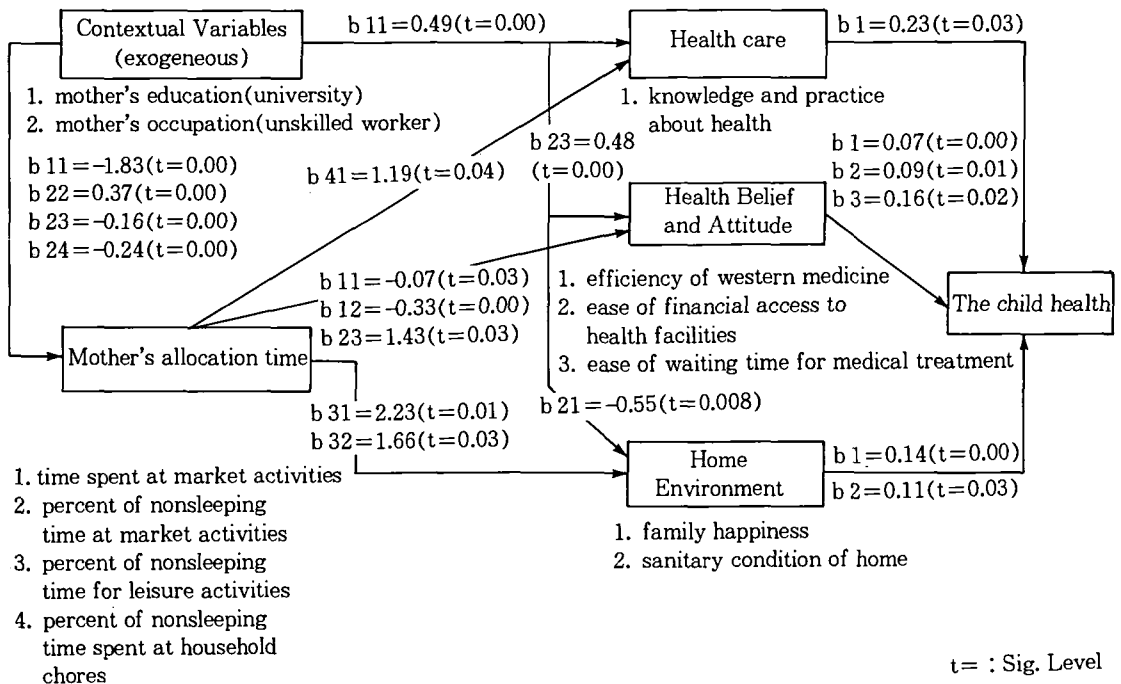


Figure 5-4 Impacts of the Allocation of Mother’s Time on Health through the Factors Hypothesized as Determining Health, given Contextual Variables Chosen-Path Analysis

The relationship shown through the latter avenue has already been well documented by many previous studies of the relationship between socio-economic and cultural variables and health. This study treats these variables as contextual variables and focus on finding out the nature of impacts of one's daily activities, as represented by the time allocated to these activities, on his/her health status through the process of activity variables influencing those factors hypothesized as determining one's health status.

IV. Concluding Remarks

Let us consider "Health" as the final output and health care, nutrition(food), exercise, smoking(negative input), etc, as inputs for the "production" of health. Then, in order to maximize health output, for given resource, inputs for health should be chosen carefully according to each input's cost-effectiveness.

The basic assumption of this study is that individual and each family as a unit attempt to maximize his/her and the family's health by choosing the most cost-effective input in the optimum combination to maximize health.

The health production process can be looked at from various perspectives. One way attempt to examine every health promotion item and activity and analyze each item, or activity's cost

-effectiveness of production of health.

This is, if not possible, task because it is not possible to accurately measure each health promoting item and activity's marginal contribution for improving health. This study considers each individual and each family's time as one of the most important factor for the production of health.

Therefore, the emphasis is placed on examining how each member of a family spends his/her time in daily life within his/her socio-economic and cultural context. Then how the pattern of allocation of one's time influences for the production of health is analyzed.

There are several insights provided this study. The statistical analysis of survey data offered an appropriate means of testing the hypothesized structural relationship among(the allocation of time for) various market and non-market activities: knowledge, attitude, belief and practices about health(care): home environment, dietary practice and financial, physical and emotional access to health facility of one's choice. In addition, whether the mother affords to spend her entire non-sleeping time for her family's welfare has a decisive effect on her child or children's health more than any factor. And the level of mother's education achievement appears to determine how well she succeeds in promoting the health of every member of her family, particularly her children's health.

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시간분배의 관점에서 본 경제 및 비경제 활동이 건강에 미치는 영향

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職業과 健康과의 관계는 과거에 많은 研究가 되어왔다. 그리고 그 관계는 각각의 職業에서 요구되는 활동을 分析하고 그것이 健康에 미치는 영향을 중심으로 研究가 進行되어져 왔다. 그러므로 研究의 焦點이 個人의 職業的 行爲 또는 市場 行爲(Market Behavior)가 健康에 주는 영향이었다. 그러나 한 個人의 行爲가 健康에 주는 영향을 研究하려면 당연히 個人의 非市場行爲(Non-Market Behavior)가 健康에 주는 영향도 고려되어져야 할 것이다. 그러므로 本 研究는 健康에 영향을 주는 個人의 行爲를 市場行爲뿐 아니라 非市場行爲까지 고려하여 分析하였다.

특별히, 本 研究는 Becker교수의 '時間配分에 관한 理論(The theory of allocation of time)'과 Lancaster교수의 '新 消費者 行動理論(New theory of consumer behavior)'에 기초하여 1) 個人의 行爲를 市場行爲, 2) 餘暇 및 消費行爲,

3) 家事活動 등으로 나누어 각 활동에 시간을 얼마만큼 투입하는가를 측정하였고, 그것의 통계적 分析을 통해서 健康에 영향을 주는 重要變數들이 이들 時間의 配分과 어떠한 構造的 關係를 갖고, 최종적으로 健康에 어떤 영향을 주는가를 研究하였다.

과거에는 한 家庭의 健康에 대한 상태, 믿음, 行爲의 결정요소로서 社會經濟的, 文化的 特性을 중심으로하여 研究가 되었지만 本 研究의 몇 가지 특징은 아래와 같다. 첫째, 社會經濟的 상태를 狀況變數로 처리하였고, 個人의 時間配分으로 반영된 市場/非市場行爲가 健康生産投入物의 費用效果性에 대한 認知(Perception)에 대한 지식과 財政的, 物理的, 文化的 접근의 容易性에 어떤 영향을 주는가를 研究하였다. 둘째, 社會經濟的 變數가 직접적으로 健康行爲에 影響을 주는 측면과 時間配分을 통해서 間接적으로 健康에 주는 영향을 分析하였다.

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