

Factors Influencing the Intention to Utilize Out-of-Pocket Health Checkup Services: A Sample of Citizens From 12 Townships of Taichung County in Taiwan

Yuh-Shiow Lee^{1,2}, Yen-Lin Chiu^{3*}, Hui-Ling Liao^{4,5}, Jin-Tang Chen⁶, Fu-Chun Lee⁷

¹Secretarial Office, ⁴Division of Pharmacy, ⁶Superintendent, and ⁷Division of Family Medicine, Fung-Yuan Hospital, Department of Health, Executive Yuan, Fung-Yuan; ²Department of Health Care Administration, Central Taiwan University of Science and Technology; ³Department of Leisure and Recreation, Asia University; ⁵Institute of Chinese Pharmaceutical Sciences, China Medical University, Taichung, Taiwan, R.O.C.

Background: Taiwan started its National Health Insurance (NHI) system in 1995. However, until now, most cancer screening tests and preventive care have been out-of-pocket (OOP) medical items excluded from the coverage of NHI. The aim of this study was to explore the factors influencing an individual's intention to utilize OOP health checkups.

Methods: A cross-sectional research method was adopted in this study. Based on the theory of planned behavior, a questionnaire was developed and used to survey purposively sampled residents ($n = 940$) from 12 randomly selected townships in Taichung County, Taiwan, from August to September 2006. Descriptive statistics and linear regression were conducted to analyze the collected data.

Results: Our results showed that result evaluation ($\beta = 0.092$), behavioral beliefs ($\beta = 0.088$), behavioral norms of people with experience in utilizing OOP health checkups ($\beta = 0.116$), perceived convenience ($\beta = 0.273$), and worry about illness and perceived health ($\beta = 0.110$) were important factors influencing the intention to utilize OOP health checkups. Age, education and acceptable health checkup charges were also related.

Conclusion: Reinforcing disease- and health checkup-related knowledge may positively influence an individual's intention to utilize OOP health checkups. In addition, improving perceived convenience and reducing disease-screening barriers can intensify the individual's intention to use OOP health checkups. The influence of age, education level and OOP checkup charges should also be taken into consideration when related policies are formulated. [*J Chin Med Assoc* 2010;73(5):252–259]

Key Words: disease screening, health checkup, out-of-pocket, theory of planned behavior

Introduction

Taiwan started its National Health Insurance (NHI) system in 1995. Since then, the preventive health care items covered by the NHI have included mammography, cervical cancer screening, well-baby care, prenatal services, and health checkups for the insured older than 40 years, but many up-to-date cancer screening technologies are excluded. Malignant tumors (i.e. cancer) have been rated the top cause of death in Taiwan for years. In 2007, malignant tumors caused 27.3% of all deaths and 10.8% of all deaths under 40 years old;¹

of NHI outpatient and inpatient medical expenditures in 2008, those for malignant neoplasm totaled approximately 37.5 billion NT dollars.² Even though the NHI offers free health checkups for the insured aged 40–64 years once every 3 years, and for the insured aged more than 65 years once a year, the utilization rate has been low (12.3% for the insured aged 40–64 and 37.45% for the insured older than 65).³ The package for a free adult health checkup includes items such as disease screening based on individual and family disease history, general physical examination, laboratory tests, and health counseling. It is especially focused on the



*Correspondence to: Dr Yen-Lin Chiu, 2, Lane 99, Letian Street, Fongyuan, Taichung 420, Taiwan, R.O.C.

E-mail: erin0825@ms58.hinet.net • Received: June 3, 2009 • Accepted: April 6, 2010

screening of cardiovascular and chronic diseases. Except for the cervical smear test, the adult health checkup excludes screening tests for most cancers or malignant tumors. Therefore, people have to pay out of pocket for any tests not covered by the NHI.

There are many health behavior-related theories and models, such as the Health Services Utilization Model,⁴ the Health Belief Model,⁵ the Theory of Reasoned Action,⁶ and the Theory of Planned Behavior (TPB).⁷ The Health Services Utilization Model is often used to assess the accessibility of health services.^{4,8} The Health Belief Model focuses more on preventive health behavior and has been applied to research into cancer screening behavior.^{9,10} It places more emphasis on the influence of status quo and attitude on behavior without taking into consideration non-health factors. TPB is one of the most widely recognized and employed theories in health behavior studies; it assumes that most human behaviors are under the control of free will, and behavioral intention is the most proximal factor determining the occurrence of a behavior. According to TPB, an individual's behavioral intention is driven by 3 sets of factors: a positive attitude toward the behavior, the perceived social pressure to perform the behavior (subjective norm), and the perceived control over the behavior (perceived behavioral control).¹¹ Many studies have proven TPB's predictability.^{12,13} TPB has been used to explain and predict health behavior,^{14,15} and it can be applied in research for predicting cancer screening behavior.¹⁶⁻¹⁹ In Taiwan, there has been a great amount of research exploring the behavior of utilizing NHI adult health checkups, and the degree of satisfaction with and loyalty in utilizing out-of-pocket (OOP) health checkups, but none of the studies have focused on the behavior of utilizing OOP health checkups. Our study, based on TPB, developed measurement tools to explore an individual's intention and behavior in utilizing OOP health checkup services to provide a reference for the formulation of preventive care awareness improvement policies.

Methods

Definition of OOP health checkup

An OOP health checkup was defined as the situation in which participants are concerned for their wellness or worry about their health being at risk, and have the willingness to receive self-paid health checkup services. The contents of an OOP checkup were considered to include a generic physical exam and any screening for cancer that has not yet been labeled with a diagnosis, not covered by the NHI, and 100% paid by examinees.

A health checkup for a job, school or any specific purpose was excluded. The definition of an OOP health checkup was disclosed in the questionnaire to inform the survey participants.

Participants

General community residents aged over 20 and under 80 years old, with the ability to fill out the study questionnaire or provide answers for the interviewer to fill in the questionnaire, were targeted. First, 12 townships were randomly selected from the 21 townships in Taichung County, Taiwan. Second, the number of subjects for each township was determined based on the proportion of 1 township's population against another. In total, 1,000 questionnaire copies were sent and collected by 3 interviewers from August to September 2006. The interviewers personally visited each purposively selected subject, explained the purpose of the questionnaire and collected the survey data. Finally, 952 residents from 12 townships were surveyed. The elimination of questionnaires with too many missing values reduced the sample size to 940. The response rate was 94%.

Ethical considerations

The study was approved by our hospital's institutional review board, and written consent was obtained from each participant prior to proceeding with the survey. A cover page with a statement explaining voluntary participation and confidentiality was attached to each questionnaire copy. The interviewers told each survey participant what the purpose of the survey was and how their responses would be used.

Instruments

A questionnaire survey method was adopted. Based on the TPB, the influence factors were decided and an open-ended questionnaire was developed. An open-ended questionnaire was then given to a targeted group consisting of 10 individuals with different demographic characteristics (e.g. sex, education level, age, marriage status) for an in-depth interview. From the interview results, a questionnaire draft was developed, and then it was examined for its adaptability and modified by related experts and scholars. The content validity ratio (CVR) was calculated for the questionnaire draft. The average value V of the CVR of every question was 0.82. V is between 0 and 1. The greater the value is, the higher the CVR. The statistical significance of V was also examined. In this study, the Z value was 2.45, which is greater than 2.33 ($p < 0.01$),²⁰ i.e. the questionnaire was a well-designed tool. One hundred samples were then tested as a pilot study. Finally, an exploratory

Table 1. Description of scales

Variable	Items	Cronbach's α
Behavioral attitude		
Result evaluation	Better understand health status Improve health Disease prevention Result is better than the NHI checkup	0.84
Behavioral belief	Painless process No side effects No influence on emotion	0.81
Behavior norm		
Normative beliefs	Family members Colleagues Friends Medical professionals People with experience in OOP checkup	0.89
Motivation to comply	Family members Colleagues Friends Medical professionals People with experience in OOP checkup	0.85
Behavior control		
External control	Compelled Promotion programs Mass media information Recommended by someone	0.83
Worry about illness	Know someone with disease Have chronic disease myself Have family disease history	0.81
Perceived convenience	Have a companion to attend the checkup Have sufficient time Affordability	0.82
Perceived health	Have related knowledge Perceived health status Relative health status	0.76

NHI = National Health Insurance; OOP = out-of-pocket.

factor analysis was further conducted to examine the construct validity of the questionnaire.

Measures

The development of the survey questionnaire was based on the TPB model. Three main variables, behavioral attitude, behavioral norms and behavioral control, were included as influence factors on behavior intention. A complete description of the scales is shown in Table 1.

Behavioral attitude

Behavioral attitude is an evaluation and subjective perception of certain behavior. Four items were used to assess the "result evaluation" of OOP health checkups. Each item, e.g. "a better understanding of health status", was rated on a 7-point scale from "strongly disagree" to "strongly agree". An averaged score of these

4 items was calculated. The higher the score was, the more positive the result evaluation. Three items were used to assess "behavioral beliefs" about OOP health checkups. Each item, e.g. "painless process", was also rated on a 7-point scale. An averaged score of 3 items was calculated. The higher the score was, the more positive the behavioral belief. The Cronbach's α of "result evaluation" and "behavioral beliefs" were 0.84 and 0.81, respectively.

Behavioral norms

A set of questions was used to evaluate how survey participants perceived the approval or disapproval of utilizing OOP health checkups from related people. The strength of normative beliefs was multiplied by the participant's motivation to comply with related people's opinions. "Related people" included family, colleagues,

friends, medical professionals and people with experience in OOP health checkups. The strength of normative beliefs was measured by questions such as “my family members approve of my utilization of OOP health checkups”, which were rated on a 7-point scale from “strongly disagree” to “strongly agree”. To measure a survey participant’s motivation to comply, the subject was asked to respond to statements such as “I would agree with my family’s opinions about utilizing OOP health checkups”, which was also rated on a 7-point scale. A higher score indicated higher social pressure from related people to perform the action. The Cronbach’s α was 0.89 for “normative beliefs” and 0.85 for “motivation to comply”.

Behavioral control

Behavioral control is the degree of domination or control of one’s behavior. Survey participants were asked how much they agreed with the 4 influence factors for having OOP health checkups. Four items were used to assess “external control” factors, such as “promotion programs” and “mass media information”, which were rated on a 7-point scale. Three items were used to assess “worried about illness” factors, e.g. “have family disease history”, which were rated on a 7-point scale. The “perceived convenience” factors, including “having someone to accompany me to go to the checkup” and “having sufficient time”, were rated on a 7-point scale. Two items were used to assess “perceived health” factors: “perceived health status” and “relative health status”, rated on a 7-point scale. The averaged scores of these 3 factors were calculated, and a higher score indicated more influence from these factors. The Cronbach’s α scores of the 4 influence factors were 0.83, 0.81, 0.82 and 0.76, respectively.

Behavioral intention

The intention to undergo an OOP health checkup was measured with 2 items: “I intend to accept an OOP health checkup in the next 12 months” and “I intend to accept an OOP health checkup within the next 60 months”, which were rated on a 7-point scale from “strongly disagree” to “strongly agree”. An averaged score of these 2 items was calculated. A higher score implies higher intention. The Cronbach’s α of the intention variable was 0.78.

Results

Descriptive statistics

The demographic characteristics of the 940 subjects who returned valid questionnaires that were analyzed

Table 2. Demographic characteristics of the 940 participants

Variable	n (%)
Age (yr)	
20–29	220 (23.4)
30–39	224 (23.8)
40–49	263 (28.0)
50–69	205 (21.8)
≥ 70	25 (2.7)
Missing data	3 (0.3)
Sex	
Female	467 (49.7)
Male	472 (50.2)
Missing data	1 (0.1)
Marital status	
Single	292 (31.1)
Married	642 (68.3)
Missing data	6 (0.6)
Education	
Junior school or lower	179 (19.0)
Senior/vocational	365 (38.8)
College/university	335 (35.6)
Graduate or higher	54 (5.7)
Missing data	7 (0.7)
Family income (average NTD/mo)	
< 30,000	174 (18.5)
30,000–79,999	517 (55.0)
≥ 80,000	243 (25.9)
Missing data	6 (0.6)
Acceptable OOP health checkup charge (NTD)	
< 3,000	479 (51.0)
3,000–9,999	368 (39.1)
10,000–19,999	78 (8.3)
≥ 20,000	10 (1.1)
Missing data	5 (0.5)

NTD = New Taiwan Dollar; OOP = out-of-pocket.

in the study are shown in Table 2; 467 (49.7%) were female and 472 (50.2%) were male. The numbers do not add up to 940 because while the subjects filled out most of their questionnaires, some left blanks in their demographic variables.

A comparison between the sex and age distributions of the subjects and those of Taichung County’s population in 2006 (49% female, 25.4% aged 20–29, 22.1% aged 30–39, 22.3% aged 40–49, 24.5% aged 50–69, and 5.6% aged 70–79)²¹ shows that the distributions are similar, and thus there was little concern about sampling bias.

Just over half of the survey participants (51.0%) agreed that an acceptable OOP checkup charge should

be less than 3,000 NT dollars. Table 3 shows the correlation coefficients of the primary variables. Except for the finding that the perceived health and OOP health checkup intention had a negative correlation, the correlation coefficients between independent and OOP health checkup intention were positive ($p < 0.05$, $p < 0.001$).

Factors influencing the intention of OOP health checkups

Results of linear regression analysis on OOP health checkup intention are presented in Table 4. Result evaluation ($\beta = 0.092$) and behavioral beliefs ($\beta = 0.088$) had a significantly positive influence on OOP health checkup intention ($p < 0.05$). The norms of people with experience in OOP health checkups had a significant influence on OOP health checkup intention ($\beta = 0.116$, $p < 0.05$). The higher the degree of concern about illness, the stronger the intention was ($\beta = 0.110$, $p < 0.05$). The perceived health status also had a significantly positive influence on intention ($\beta = 0.273$, $p < 0.001$). A better perceived health status resulted in a weaker intention ($\beta = -0.110$, $p < 0.001$). The intention was higher in older age groups compared with participants aged less than 30 years ($p < 0.05$, $p < 0.01$). The level of family income had no influence on intention. For an acceptable OOP health checkup charge, a higher acceptable charge led to a higher intention ($p < 0.05$, $p < 0.001$).

Discussion

In this study, we determined the salient factors associated with OOP checkup intention using the TPB as the theoretical framework. The relevant factors identified in this study provided insight into the motivational factors affecting peoples' intention to use OOP health checkups. These factors may be useful in planning future interventions in disease screening not covered by NHI.

In this study, the result evaluation and behavioral belief variables of behavioral attitude contributed toward behavioral intention. When the participants developed a more positive attitude toward OOP health checkups, they were more likely to have one in the future. This finding indicated that psychological factors may influence cancer screening behavior. It has previously been found that fear and anxiety associated with learning whether or not one has cancer results in avoidance behavior with regard to cancer screening.²² Another study of colon cancer screening behavior indicated that the more negative the belief is, the lower the occurrence of screening behavior will be.²³

Table 3. Correlation coefficients of behavioral attitude, behavioral norms, behavioral control and behavioral intention of out-of-pocket health checkups

Factor	Subfactor	1	2	3	4	5	6	7	8	9	10	11	12
Behavioral attitude	1. Result evaluation	-											
	2. Behavioral beliefs	0.54*											
Behavioral norms (normative beliefs x compliance motivation)	3. Norms of family	0.56*	0.30*										
	4. Norms of colleagues	0.40*	0.40*	0.48*									
	5. Norms of friends	0.41*	0.39*	0.51*	0.87*								
	6. Norms of professionals	0.50*	0.27*	0.57*	0.52*	0.54*							
	7. Norms of the experienced	0.47*	0.30*	0.51*	0.57*	0.59*	0.68*						
Behavioral control	8. External control	0.38*	0.39*	0.44*	0.41*	0.42*	0.34*	0.39*					
	9. Worry about illness	0.47*	0.33*	0.56*	0.41*	0.42*	0.52*	0.48*	0.68*				
	10. Perceived convenience	0.57*	0.45*	0.54*	0.45*	0.48*	0.51*	0.52*	0.66*	0.70*			
Behavioral intention	11. Perceived health	0.17*	0.22*	0.19*	0.20*	0.20*	0.08†	0.18*	0.19*	0.16*	0.21*		
	12. Behavioral intention	0.38*	0.33*	0.29*	0.30*	0.30*	0.33*	0.37*	0.29*	0.35*	0.46*	-0.01	-

* $p < 0.001$; † $p < 0.05$.

Table 4. Multiple regression analysis of out-of-pocket health checkup intention*

Independent variable	Variable	B	(S.E.)	β	<i>p</i>
Constant		1.914	(0.347)		<0.001
Behavioral attitude	Result evaluation	0.114	(0.056)	0.092	0.041
	Behavioral beliefs	0.096	(0.042)	0.088	0.023
Subjective norms	Norms of family	-0.003	(0.006)	-0.024	0.590
	Norms of colleagues	0.009	(0.008)	0.064	0.314
	Norms of friends	-0.001	(0.009)	-0.004	0.949
	Norms of professionals	-0.007	(0.006)	-0.052	0.285
	Norms of the experienced	0.015	(0.006)	0.116	0.015
Behavioral control	External control	-0.071	(0.053)	-0.064	0.174
	Worry about illness	0.139	(0.065)	0.110	0.031
	Perceived convenience	0.344	(0.063)	0.273	<0.001
	Perceived health	-0.130	(0.037)	-0.110	<0.001
Age (yr)	< 30	Reference			
	30-39	0.274	(0.124)	0.085	0.027
	40-49	0.268	(0.128)	0.085	0.036
	50-69	0.394	(0.144)	0.111	0.006
	≥ 70	0.737	(0.309)	0.080	0.017
Education	Graduate or higher	Reference			
	Junior high or lower	-0.521	(0.210)	-0.141	0.013
	Senior/vocational high	-0.585	(0.184)	-0.201	0.002
	College/university	-0.555	(0.181)	-0.191	0.002
Average family income/mo (NTD)	< 30,000	Reference			
	30,000-79,999	0.035	(0.118)	0.012	0.769
	≥ 80,000	0.153	(0.138)	0.047	0.269
Acceptable health checkup charge (NTD)	< 3,000	Reference			
	3,000-9,999	0.512	(0.125)	0.130	<0.001
	10,000-19,999	0.509	(0.248)	0.063	0.041
	≥ 20,000	1.484	(0.608)	0.075	0.015

*The dependent variable was behavioral intention. B=unstandardized coefficient; S.E.=standard error; β =standardized coefficient. For this regression model: $R^2=0.321$; adjusted $R^2=0.301$; $F=15.639$ ($p<0.001$).

It is notable that in this study, behavior control was the most powerful predictor of behavior intention among the 3 cognitive factors of the TPB model. Perceived convenience had the most influence on intention ($\beta=0.27$), followed by worry about illness ($\beta=0.11$) and health status ($\beta=0.11$). With regard to perceived behavioral control, when the participants perceived that getting an OOP checkup was a convenient task, they were highly motivated to get one. A previous study indicated that non-price barriers like travel and waiting time were inversely related to the likelihood of cancer screening.²⁴ Therefore, improvement of the accessibility of checkup services may enhance the motivation to have OOP checkups. In the present study, we found that when participants worried about suffering from disease, their intention to get OOP health checkups was higher, but when they perceived a better health status, they were less motivated to get OOP checkups. The result of another

study showed that individuals in poor health were more likely to have preventive medical behavior.²² Similar research has also indicated that health status and family disease history are related to cancer screening behavior.^{25,26} Increasing the understanding of diseases may positively influence preventive behavior.²⁷ The less disease-related knowledge one has, the more negative one's attitude toward disease screening; less knowledge and negative attitude have a negative influence on disease screening intention.¹⁷ Therefore, by increasing disease- and health checkup-related knowledge, an individual's attitude and intention toward disease screening and preventive medical care could be reinforced. It has been suggested that related interventions should be developed to supply more medical and disease screening information to the general population. Interventions such as invitation appointments, letters and telephone calls are effective in increasing disease screening uptake.²⁸

The behavioral intention of participants with a high acceptable health checkup charge is higher than those with a relatively low acceptable charge. The results of cancer screening studies have shown that the higher the barrier of perceived cancer screening is, the lower the possibility of screening behavior occurrence.²³ A more reasonable health checkup charge will lead to a higher intention to get a health checkup. Research indicates that preventive medical care is a price-sensitive medical service.²⁹ In addition, a higher health checkup charge will lead to less preventive medical action.³⁰ It has also been found that increasing a few economic incentives may also increase the occurrence of preventive medical behavior.³¹ In this study, nearly 50% of the participants had a very low stated acceptable OOP health checkup charge of less than 3,000 NT dollars. In light of health economics, a subsidy covering the difference between the willing-to-pay charge and actual charge may increase the OOP health checkup intention and diminish the medical costs of treating disease. However, the magnitude of such an incentive and the identification of cost-effective incentives require more investigation.

Unlike other disease screening studies, our study found that family income had no significant influence on the willingness to obtain OOP health checkups.^{25,32} Some studies have shown that the comparison between perceived benefits and perceived barriers influences individual optimal choice.²⁷ According to this viewpoint, by increasing sufficient correct disease-related knowledge and screening information, the perceived benefits in carrying out disease screening may be increased and the perceived screening barriers may be reduced correspondingly.

Our study found that the behavioral norm of those people who had previous experience in OOP health checkups had a significant influence on other people's willingness to have the same health checkups. Experience sharing is a factor influencing the intention to get a preventive health checkup. Although the behavioral norm of medical professionals did not show the same significant influence, many studies have emphasized that communication, trust and knowledge-building between medical professionals and patients can increase the occurrence of preventive disease screening behavior.^{23,33} Perhaps it is due to a cultural difference that Taiwanese people trust significant others more than professionals.

We found that the elderly had a higher likelihood of having OOP health checkups compared with younger individuals. This result is similar to that of related studies. Age is a factor influencing preventive health behavior.^{17,32} However, the increasing occurrence of

severe disease among the young population is another concern. Education is also an important factor influencing the intention to have OOP health checkups. Studies have shown that the higher the education, the higher the intention to engage in preventive medical behavior.^{17,26,32} Education is an important indicator of socioeconomic status, which influences the attitude toward disease and preventive disease screening.³⁴ Therefore, people with a lower education or lower socioeconomic status should be offered more disease and preventive health-related knowledge to reinforce the occurrence of their preventive health behavior.

It is noteworthy that the findings of this study are different from those of other previous studies. In other disease screening studies, behavioral norms and attitudes contributed more to the explanation of intention and perceived behavioral control had a relatively low contribution.^{35,36} However, in this study, behavioral control had the most powerful influence on intention. This difference between studies may be attributed to the fact that the OOP health checkup is not free. Findings in a meta-analysis study showed that attitudes and perceived behavioral control were significantly better predictors of intention in free screening versus paid screening.³⁷

Several limitations of this study should be noted. First, the primary variables were self-reported measures. A criticism of self-reported measures is the possibility of their introducing common method bias. Second, random sampling was not conducted when the survey participants from the 12 townships were selected, and the participants were citizens in only Taichung County. Therefore, the generalization of the study results may be limited. Third, although intention is the most important influence on actual behavior, behavior is not necessarily a consequence of intention. Hence, the findings of this study on the intention of OOP health checkups may be altered in the occurrence of behavior. A study has shown that behavioral attitude, norms and control have different strengths of influence on behavior and intention in different contexts (e.g. type of screening test, location of recruitment, screening cost).³⁷ Therefore, further research is required to explore moderators that affect the relationship between intention and actual behavior.

In conclusion, this study provides insight into behavioral attitudes, norms and control with respect to OOP health checkups. Its findings highlight the role of perceived risk of disease and non-price barriers to OOP health checkups, and it shows that increase in health checkup-related knowledge, positive attitude and perceived convenience may intensify the intention to use OOP health checkup services. In addition,

age and education level are important factors of OOP health checkup intention. These findings may provide useful references for health promotion policies and intervention programs to improve people's awareness of preventive health care.

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