

## An Empirical Study on the Autonomy and Satisfaction for the Physician Behavior under the National Health Insurance Plan in Taiwan

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### ABSTRACT

*The current research will focus on the issue of physician autonomy and satisfaction under the NHIP to explore the dimensions of physician behavior and establish a reliable measurement in Taiwan.*

*The research conducted a cross-sectional, mailed survey study on hospital-based physicians in Taiwan. The questionnaires were mailed to physicians during the first two months of 2020. Random selection and stratified sampling procedure was used to select homogeneous samples of subset of physicians. SPSS 23.0 and Smart PLS 3.0 for windows were used for data analysis. The study hypothesized that the physician satisfaction covers: resources, autonomy, professional relationship and hypothesized dimension that included autonomy, management, workload, incomes and physician-patient relationship and so no.*

*A total of 772 mailed out, a total of 641 mails were used for analysis purpose that constituted an adjusted response rate of 83.79 percent. About less than one half of the respondents reported that they were satisfied with their jobs. Physicians in Taiwan are generally more dissatisfied and the situation is getting worse than before. The estimated average annual income of physicians in Taiwan is about five times more than that of the general population. Moreover, they tend to come from overall better family background and enjoy higher than average social status. All of them have passed the toughest and most competitive national examinations to enter medical schools.*

*The implementation of the national health insurance policy in Taiwan changes the landscape of market practice to a certain extent. In current study we found that the general levels of satisfaction among physicians in hospitals under the NHIP and the aspects they were satisfied and dissatisfied. Secondly, physician demographics and hospital characteristics were significantly associated with physician satisfaction. Thirdly, some of the attitudinal and behavioral analysis correlated with physician satisfaction and dissatisfaction.*

### Keywords

Autonomy, Satisfaction, Physician Behavior, National Health Insurance Plan, Taiwan.

### Research Background

While physician autonomy is frequently invoked as an important value, there have been few attempts to specify its meaning. To many, physician autonomy means that physicians should have complete freedom to provide treatments for patients according to their best judgment [1]. Many physicians believe that managed

care and market competition have eroded their satisfaction with medical practice. Sources of physician dissatisfaction include loss of autonomy, increase in administrative burdens, potential loss of patients and income, greater time pressures, and threats of malpractice litigation [2].

Overall, physicians experience moderate to high levels of job, work, and career satisfaction, and these levels have remained stable over time. This is surprising given discussions in the popular press of declining physician satisfaction. The observed

consistency and the high levels of satisfaction do not tell the entire story. While autonomy, income, and perceived job demands are several of the stronger predictors of physician satisfaction, variables such as age and gender have been understudied. And our understanding of what drives physician satisfaction still draws too heavily on other variables that are less salient given today's workplace and the current trends in professional demographics and employment arrangements. Future thinking and research on physician satisfaction should align more with the array of changes now occurring within the current situation [3].

Satisfaction is important. Physician satisfaction has been found to strongly correlate with patient satisfaction and desirable patient outcomes. A balance in the specialty mix of physicians is necessary to maintain a high quality of medical care for all patients. Current dissatisfaction may lead to future declines in numbers of physicians within specialties. Dissatisfied physicians may be more likely to unionize, to strike, to experience medical problems themselves and to exit medicine altogether. Finally, dissatisfaction may increase rates of medical errors, thus jeopardizing patient safety [4].

The issues of job satisfaction and service quality and their interaction have long been a topic of research interest to behavioral scientists. Most of the satisfaction research, however, conducted on subjects other than physicians. May be this is caused by an assumption that physicians are generally satisfied with their work. Physicians used to be able to change their practice settings easily should they not satisfy with their work environment. Physician satisfaction is a very important concept not only for health systems management but also for government in health policy making. A better understanding of the factors that can affect physician satisfaction is crucial to manage current health care problems in Taiwan.

The implementation of the NHIP has presented a challenge to physicians, patients and government in finding a common ground of operation. The NHIP in Taiwan, just like managed care in the U.S. and health insurance plans in many other countries such as Canada, UK and Netherlands, might have altered medical practice environment and created great impact on physician satisfaction. When a physician is dissatisfied with his job, the feeling of dissatisfaction may reflect his practice and reduce the quality of patient care service. There are many factors that can affect physician satisfaction in their practice. Physician and hospital characteristics are the two major factors that can affect physician satisfaction. Although there have been many studies conducted in the several countries that have implemented national health insurance plans in studying the impact on physician satisfaction, there is no reliable instrument to measure physician satisfaction accurately. Moreover, very little data has been produced in Taiwan regarding physician satisfaction. As an empirical study, the current research will focus on the issue of physician satisfaction under the NHIP to explore the dimensions of physician satisfaction and establish a reliable measurement in Taiwan.

## **Literature Review**

### **A. Health Care Systems in Taiwan**

According to the official report of Taiwan government, at the end of 2020, there were 475 hospitals in Taiwan. There were 394 private hospitals and 81 public hospitals including provincial, municipal, city and county hospitals, medical school affiliated hospitals, veteran, and military hospitals. Totally there were 52,596 registered physicians (traditional Chinese physician were not included) in practice. On the average each physician will serve 650 persons. About 60 % of registered physicians under the NHIP are currently full-time practicing in hospitals.

The purpose of hospital accreditation is to identify well-organized hospitals and upgrade the quality of health care service so as to lay a function for health care by level. Hospitals in Taiwan are currently accredited and classified into three levels: 23 medical centers, 79 regional hospitals, and 318 district hospitals. A set of standards, procedures, forms and records have been formulated on the hospital accreditation. Senior physicians, nurses, pharmacists and hospital management specialists are invited on the accreditation teams to visit and access hospitals.

Health care cost in Taiwan is thoroughly financed by central government, the Bureau of the NHIP. In the design of co-payment system, the government, employers and employees will pay the premiums at a fixed ratio negotiated by the Health Ministry and Legislative Yuan. The total budget in 2019-2020 fiscal year was about twenty-five billion US dollars. Generally, physicians in Taiwan are paid by a fee-for-service basis for private practice as well as OPD visit and DRGs for inpatient, according to a schedule set by the Administration of the NHIP. Most physicians practicing in hospitals under the NHIP are all staff models in salaried basis. In terms of "closed hospital system" in Taiwan, there is no "physician fee" in the fee schedule such as in the U.S. payment system to pay for physicians especially. They are all employees in hospitals usually paid by a fixed amount of salary plus a proportional physician fee called PPF.

### **B. Physicians as Controllers of Health Care Resources**

With their professional knowledge, physicians can exercise their influence on the health care delivery. They can control patient care process, order special tests or procedures for diagnostic purposes, determine the extent of resources usage, and decide when and how often the care can be given. Physicians are important controllers of health care system. As controllers of health care resources, their satisfactions are important to patient satisfaction and their behaviors are also critical to maintain the quality for health care services. Negatively, physicians can order excessive tests or procedures, utilize more expensive supplies than necessary, waste supplies, and prolong patient's length of stay by delaying procedures. Positively, on the other hand, they can work with health care organizations by minimizing costs while producing high quality care.

Physician satisfaction is important because it contributes to the quality of health care. Previous studies indicate that greater

physician satisfaction is associated with appropriate prescribing practices, patient adherence and greater patient satisfaction. Physician satisfaction also results in less turnover, which contributes to patients' continuity of care, patient satisfaction and retention, and lower administrative costs of recruiting and replacing Physicians. Dissatisfied physicians also may have more costly practice styles, generating more outpatient procedures and referrals. Because of these associations, provider satisfaction is regarded as one of the critical outcomes of health care, along with health status, patient satisfaction, and cost [2].

### C. Critical Previous Studies

Physician satisfaction studies have been undertaken for more than fifty years in other developed countries. Fuchs [5] in a book published in New York proposed physician satisfaction was derived from more than just income. Peer approval, patient relationship, instinct of workmanship, demands of family, and life-style preferences were identified as the dimensions that determined physician satisfaction. As with many other professionals, physicians place a high value on gaining and maintaining the respect of their peers. Patient approval also provides psychological rewards. The instinct of workmanship refers to the desire to be technologically competent. The demand of the physicians' families and their own preferred life-styles can also influence on their satisfaction levels. In general, the initial focus of research in early stage has been only on the organized settings or bureaucratic working environment and their general satisfactions. Stamps et al. [6] tried to develop a measurable scale to assess the dimensions of job satisfaction for healthcare professionals. These dimensions included income, independence in the setting, administrative details, the opportunities for interaction at work, and the nature of the relationship with other staff.

Linn et al. [7] conducted a study related to the physician and patient satisfaction with regard to the organization of internal medicine group practices. The main finding of this study was patient satisfaction correlated significantly with the physician satisfaction. Patient who had more satisfied had a greater likelihood of having more satisfied physicians.

Schulz & Schulz [8] studied the relationship of professional autonomy and physician satisfaction. Their analysis revealed that the management practices were the most important predictors of perceived clinical autonomy and physician satisfaction. They concluded that the perceived clinical autonomy was an important factor in explaining physician satisfaction while healthcare organizations moving into more organized settings where their autonomy is more constrained and where management has more responsibility for physician satisfaction.

Stevens et al. [9] conducted another research in Netherlands, studying the physician satisfaction, professional characteristics and behavior formalization in hospitals. The finding showed that the work environment that formed by workload and patient demand was the important factor to affect professional autonomy and physician satisfaction.

For the management perspective, Schulz & Schulz (1988, 1993, 1997) reported that the management practice was the most important factor to affect physician satisfaction in the dimension of professional autonomy, especially in a managed care environment. Blair and Fottler [10] showed that physicians were regarded as the most influential stakeholders of the health care organizations and pointed out management was the major factor to affect physician satisfaction and their career objectives. Stevens et al. [9] also reported that the management-related activities in hospitals would bring much influence on work environment and physician satisfaction.

More than one-half of all US physicians experience burnout, with primary care physicians having one of the highest rates. Among the largest contributors to burnout is a growing clerical workload. For every hour physicians provide direct face time to patients, two more hours are spent on EHR and desk work [11]. The workload has been assumed as the first and most important dimension of physician satisfaction since twenty years ago.

Burnout is a syndrome of exhaustion, cynicism, and decreased effectiveness at work. The burnout syndrome, first described in 1974, can affect workers in all fields, particularly those whose work involves an intense interaction with people (eg, teachers, social workers, police officers, health care workers). The first large, national study of burnout among US physicians across all specialties, did not occur until 2011. That study of 7288 participating physicians documented that approximately 45% reported at least one symptom of burnout and that burnout was more common among physicians than US workers in other fields. The lack of national data on burnout prior to 2011 makes it difficult to put these results into the context. Current estimates suggest that the prevalence of burnout among practicing physicians in the United States exceeds 50% [12].

### D. External Factors Related to Physician Satisfaction

There are also two external factors brought by the NHIP that can affect physician satisfaction in Taiwan. These factors include competitive environment and physician-patient relationship.

#### a. Competitive Environment

A critical factor in the NHIP initiatives is cost control, the root problem of current health care system in Taiwan. Health care reform mechanisms have been set up to reduce the payment side of the health care equation. Accordingly, hospitals have to continue providing services below payment levels allowed by the third-party payer, the Bureau of the NHIP. As a result, hospitals have to aggressively seek ways to meet the challenge, either by reducing cost, exploring new management practices such as clinical pathway and proportional physician fee (PPF), or affiliating with other health care providers to form "hospital alliances" to spread overhead and cost of personnel. Therefore, the number of larger hospitals expanded and small hospitals collapsed day after day. The shrinkage rate of district hospitals was estimated about 25% per year since 1995. The rapid change of health care environment

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will certainly affect much more on physician satisfaction now than before.

The current competitive environment, brought about by the NHIP, has forced hospitals to reduce costs, especially on those expensive health services. It is possible, as the reduction of resources continued, the level of physician satisfaction may decrease and turnover rate can increase rapidly. According to the reports in some hospitals in Taiwan, physician turnover rate reaches higher than 50% per year. In some specialty area such as general surgeon, pathology, radiology, etc, the turnover rate reaches even close to 100%. There will be significant relationship between the turnover rate and physician satisfaction. The high physician turnover rate, to some extent, will certainly impact on patient satisfaction and service quality.

### **b. Physician-patient Relationship**

Perhaps the defining element of physician autonomy is that it arises in the context of the patient-physician relationship. Illness renders patients vulnerable and physicians have specialized knowledge and skills that give them the power to take advantage of that vulnerability. Consequently, the ethical justification for physician autonomy requires that they exercise liberty to promote their patient's best interests not their own interests. Therefore, physician autonomy is the freedom to determine both the conditions of practice and the care delivered with the principal goal that care decisions are aimed at promoting the patient's well-being [1]. The patient-physician relationship plays a crucial role in primary care visits. During consultations, physicians must adopt a patient-centered approach and make it apparent that they care for patients [13].

The challenge to the physicians is to decide how to evaluate the preferences and to economically provide what the patient demands within the cost-sensitive environment under the NHIP. It will be important to align the patients' and physicians' preferences as much as possible. If the physicians desire systems that are not similar to those preferred by the patients, then the hospitals might have to encourage physicians as to the needs of their clients. These are potential conflicts between patients' and physicians' priorities; thus, the physician-patient relationship could be the dimension of affecting physician satisfaction.

### **Methodology**

Physicians are difficult to be drawn to respond to a study because of their time limitation and the frequency in which they are asked to participate in researches. However, there is no easy way to measure physicians' attitudes or opinions regarding their job satisfaction except conducting satisfaction survey. There are basically two approaches in measuring physician satisfaction. One is to pose a single question to ask physician if they are satisfied with their current jobs. The other is to ask physicians to compare their satisfactions with their current jobs to reference jobs or next best alternative jobs. The second approach is used by researches

upon which the Discrepancy Theory of physician satisfaction is developed. The current research is taking a modified version of the second approach.

For this purpose, a cross-sectional, mailed survey study on hospital-based physicians in Taiwan is designed. The 7-point Likert scale type questionnaire is constructed. The questionnaires were developed based on variables identified from literature and the result of a pilot study conducted. The study questionnaires designed for this study were mailed to physicians during the last two months of 2020. The study sample includes those randomly selected hospital physicians practice medicine in Taiwan registered under the National Health Insurance Plan. A stratified sampling procedure is used to select homogeneous samples of subset of physicians from physicians at medical centers, regional hospitals and district hospitals. SPSS 23.0 and Smart PLS 3.0 for windows will be used for data analysis.

### **A. Research Problems**

Physician satisfaction is an important concept in behavioral science and health systems management, especially in the health policy-making process of the National Health Insurance Plan in Taiwan. It is not only the successful index of the NHIP in terms of "socialized health care reform" but also a leading factor of system performance in health care organizations. Patient satisfaction is often treated as a measure of service quality, and physician satisfaction can certainly offer a similar measure from a different perspective.

But little attention has been paid to the role of physician satisfaction in health policy-making process in Taiwan. Dissatisfaction of a single physician may indicate an isolated incidence but collective dissatisfaction of physicians is an issue requires serious attention.

### **B. Research Hypothesis**

- a.** There is no significant relationship between one single item of overall satisfaction and physician satisfaction. Physician satisfaction is a concept with multiple dimensions.
- b.** There are significant relationships between demographic characteristics and physician satisfaction whereas age, level, and salary are the three leading demographics related to physician satisfaction.
- c.** The hypothesized dimension including income, workload, and management can explain more variance in physician satisfaction than the dimension of autonomy.

### **C. Conceptual Framework**

The following is the conceptual framework of physician satisfaction research in the current study including physician and hospital characteristics, external factors, and hypothesized dimensions through the literature review and pilot study. A conceptual model for the current study was also constructed accordingly.



**Table 1:** All variables Covered in the Physician Satisfaction Study in Taiwan.

Dimensions/Variables
Question Number
Resources
1. Overall physical and human resources
2. Number of doctors
3. Number of other professional staff
4. Medical equipment and supplies
5. Location of clinical practice
6. Functional quality of care
7. Community support after patient discharge
8. Continuation of patient care
9. Time for each patient
10. Leisure time after work
Autonomy and Status
11. Autonomy in patient treatment
12. Autonomy in prescription writing
13. Autonomy in unit change initiation
14. Autonomy in selecting patient cases
15. Potential in improving patient health
16. Influence on unit management
17. Supervisor's appreciation
18. Clarity of job, duties and role
19. Status in the profession
Professional Relations
20. Competency of physician colleagues
21. Competency of non-physician colleagues
22. Nurse efforts in patient assistance
23. Relationship between physicians and non-physicians
24. Professional stimulation and support among physicians
Overall Satisfaction Score
25. Overall satisfaction
Hypothesized Variables (from pilot study)
26. Physician-patient relationship
27. Workload
28. Income
29. Management in the working environment
Open Ended Questions
30. The most satisfying thing in the job
31. The most dissatisfying thing in the job

## Statistical Results

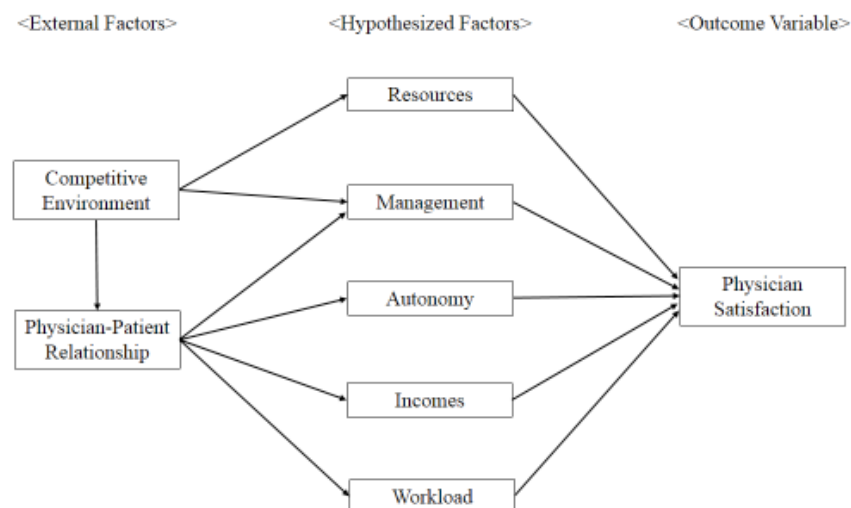
A total of seven hundred and seventy-two questionnaires were mailed to qualified physicians who currently practice medicine in the selected hospitals as described in the previous chapter. Questionnaires were mailed out with a cover letter and a self-addressed envelope with returned stamp. Out of 772 mailed out, a total of 652 mails were returned. Among the returned mails, one was blank, three did not provide demographic information and seven returned for wrong address. Excluding these eleven mails, a total of 641 mails were used for analysis purpose that constituted an adjusted response rate of 83.79 percent.

**Table 2:** A Stratified Sampling Frame.

Number of Hospitals	Number of Physicians	Percent
Medical Center (6)	275	35.6
Regional Hospitals (23)	275	35.6
District Hospitals (61)	222	28.8
Total (90)	772	100

The results show that majority, 69.0%, of the respondents practice medicine in the northern part of Taiwan. About half of them, 53.7%, practice at private hospitals with hospital beds of more than 800, 53.5%. The demographic variables of this study include physician background characteristics such as physician's age, gender, specialty, status, school, salary, patient care number, service time, and hospital characteristics that include hospital size, type and location. Information regarding hospital characteristics that include location, type and size are presented in Table 4.

Table 5 showed that majority of the respondents are male, 86.9% as compared to 14.1% female, with majority of them married (82.7%). Majority of the participating physicians, 79.1%, are in the age brake of 31 to 50 years old, with 48.2% in the age group of 31-40 years old and 30.9% in the 40-50 age group. Most of the respondents practice internal medicine (29.2%) or surgeon (25.4%) with majority of them, 85.3%, in the level of V.S. and were board certified.

**Figure 1:** The research model.

Overwhelm majority, 92.1%, of the respondents are general medical staff and majority of them, 60.5%, graduated from private medical schools. Majority of the respondents, 78.5%, reported that they had served on the same hospital for more than one year. Most of them, 78.5%, reported that they received training at a medical center while 16.8% reported at a regional hospital.

The respondents are fairly spread out in terms of self-reported annual income and number of patients seen per week. Twenty-point four percent, 20.4%, of the respondents reported annual income of \$18,000-\$36,000, 16.1% earned \$40,000-\$55,000, 21% earned \$58,000-\$73,000, 18.3% earned \$76,000-\$90,000 and 24.2% reported annual income of more than \$90,000. The respondents reported seen a large number of patients per week. Ten-point three percent, 10.3%, reported seen less than 50 patients per week, while 40.5% seen 50-100 patients per week, 14.8% seen 101-150 patients, 14.6% seen 151-200 patients, 10.1% seen 201-250 patients and 9.7% seen more than 250 patients per week.

**Table 3:** Item Analysis: Cronbach's Alpha Reliability Coefficient.

Dimension	Item No.	Alpha
Resources	1—10	0.84
Autonomy and Status	11—19	0.88
Professional Relationship	20—24	0.85
Hypothesized	26—29	0.81
Overall	1—29	0.94

**Table 4:** Description of the Hospital Characteristics of the Survey Physician.

Characteristics	Number (N)	Percentage (%)
Location Northern	442	69
Central	31	4.8
Southern	110	17.1
Eastern	58	9.1
Type		
Public	107	16.6
Private	346	53.7
Veteran	76	11.8
Religious	110	17.2
Other	5	0.7
Size (Beds number)		
More than 800	343	53.5
501—800	139	21.6
301—500	83	13
100—300	66	10.3
Less than 100	10	1.6

**Table 5:** Physician Characteristics (N=641).

Characteristics	Number (N)	Percentage (%)
Age (years old)		
Less than 30	53	8.3
31—40	309	48.2
41—50	198	30.9
51—60	51	7.9
More than 60	30	4.7
Gender		
Male	557	86.9
Female	84	13.1

Marital status		
Married	530	82.7
Single	84	13.1
Other	27	4.2
Specialty		
Internal medicine	187	29.2
Surgeon	163	25.4
Pediatrician	38	5.9
OBS/GYN	49	7.6
Other	204	31.9
Level		
VS	547	85.3
Resident	94	14.7
Status		
General medical staff	590	92.1
Vice superintendent and above	51	7.9
Education		
Public school	180	28.1
Private school	388	60.5
Military school	46	7.1
Foreign school	27	4.3
Service time		
New staff (less than one year)	138	21.5
Old staff (more than one year)	503	78.5
Training		
Medical center	503	78.5
Regional hospital	108	16.8
District hospital	6	1
Specialty clinics	24	3.7

All together seven variables that showed most significant dissatisfaction expressions are selected for further analysis. All these variables differentiate satisfied and dissatisfied physician at the level beyond 0.01 level of significance. Table 6 shows a summary of these significant variables.

In an order to assess correlation of six important variables that used in the study hypothesis was constructed. It shows that workload, income, management, and autonomy are all highly correlated to each other. The variable of personal time is especially related significantly to the variable of workload. Table 7 shows the Pearson's coefficient of the selected seven variables to physician demographic characteristics and hospital characteristics. It appears that age, marital status, specialist, level, and salary are highly correlated with the seven selected physician satisfaction variables.

For the path analysis and research model prediction, Table 8 and 9 as well as figure 2 show that income can explain more than twelve percent (12.4%) of the variance, autonomy can explain more than thirty percent (31.2%) with an eigenvalue of more than 3.0, and management can explain twenty-eight percent (28.5%) of the variance. The hypothesized variables in the conceptual research model including income, management and workload and so no can explain more than fifty-three percent of the variance to predict the physician satisfaction, R square is 53.2%.

Table 6: Dimensions and Variables of Physician Satisfaction

Resources Dimension	% Dissatisfaction	Neutral	Satisfaction
Overall physical and human resources	12.8	21.9	65.3
Numbers of doctors	22	17.1	58.9
Numbers of other professional staff	20.7	18.7	60.6
Medical equipment and supplies	15.5	16	68.5
Location of clinical practice	9.7	16.6	73.7
Functional quality of care	10.1	18.7	71.2
Community support after patient discharge*	40.5	26.2	33.3
Continuation of patient care	11.5	19.3	69.2
Time for each patient	22.5	24.6	52.9
Leisure time after work**	32.7	25.1	42.2
Autonomy/Status Dimension			
Autonomy in patient treatment***	4.9	5.3	89.8
Autonomy in prescription writing***	4.2	5.9	89.9
Autonomy in unit change initiation	25.7	17.1	57.2
Autonomy in selecting patients' cases	9	11.2	79.8
Potential in improving patient health	5.3	17.1	77.6
Influence on unit management*	34.2	25.1	40.7
Supervisor's appreciation	27.3	24.6	48.1
Clarity of job, duties and role	8.5	9.6	81.9
Status in the profession*	29.5	19.3	51.2
Professional Relationship Dimension			
Competency of physician colleagues	4.8	11.8	83.4
Competency of non-physician colleagues	16.1	26.2	57.7
Nurse efforts in patient assistance	10.7	18.2	71.1
Relationship between colleagues	8	15.5	76.5
Professional stimulation among colleagues	12.3	18.2	69.5
Hypothesized Dimension			
Physician-patient relationship**	10.2	19.8	70
Workload**	30.3	19.7	50
Income**	39.3	21.2	38.5
Management***	41.5	25.4	33.1

\*p<0.1, \*\*p<0.05, \*\*\*p<0.01

Table 7: Correlation Matrix of Selected Important Variables to Physician Satisfaction.

	Time	Autonomy	Status	Workload	Income	Management
Time	1.000					
Autonomy	0.321*	1.000				
Status	0.388	0.611*	1.000			
Workload	0.547*	0.372	0.445	1.000		
Income	0.367	0.466	0.541*	0.458	1.000	
Management	0.306	0.649*	0.574*	0.436	0.631*	1.000

\*p<0.1, \*\*p<0.05, \*\*\*p<0.01

Table 8: Final Statistics of Factor Analysis for Variables.

Important Variables	Communality	Eigenvalue	% of Variance
Income	0.92872	2.05109	12.4
Autonomy	0.8277	3.0872	31.2
Management	0.81818	1.736	28.5
Workload	0.97688	1.63089	24.8
Status	0.97897	0.44413	11.7
Time	0.97465	0.43849	17.1
Resources	0.9947	1.42157	26.4

Table 9: The path analysis.

Hypothesis	Tract (path)	B coefficient	t-value	p-value
H1	Resources→Satisfaction	0.264	2.753	p< 0.021**
H2	Autonomy→Satisfaction	0.312	7.881	p< 0.000***
H3	Management→Satisfaction	0.285	4.755	p< 0.0240**
H4	Incomes→Satisfaction	0.124	1.935	p< 0.054*
H5	Status→Satisfaction	0.117	0.512	p >0.203
H6	Workload→Satisfaction	0.248	1.275	p <0.012**
H7	Age→Satisfaction	0.244	1.158	p >0.203
H8	Personal Time→Satisfacyion	0.171	1.548	P >0.122

\*p<0.1, \*\*p<0.05, \*\*\*p<0.01

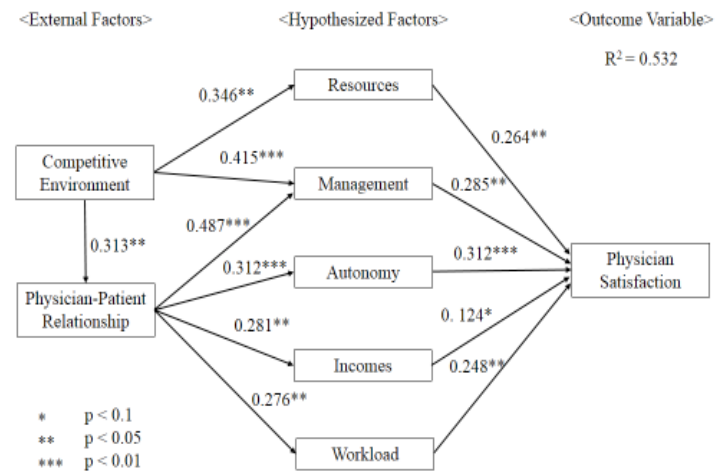


Figure 2: The research model prediction and path analysis

## Discussion and Conclusion

Taiwan is experiencing a drastic change of its health care environment since 1995 and which shape and form is continuously evolving. Physicians in Taiwan are facing a brand-new bureaucratic organization, the Administration of NHIP, which dictates and manipulates their market practice and behaviors. Little attention, however, has been given to hear their feelings in response to the change, especially their satisfaction or dissatisfaction in the rapidly changing situation. The current study is an attempt to capture Taiwan physicians' practice satisfaction under the new situation. The study measurement is thus developed to assess physician satisfaction in relation to hospital resources and demographic characteristics. It is the aim of the current research to investigate positive and negative variables in relation to physician satisfaction and accordingly to propose an equation that can be more predictable to physician satisfaction in Taiwan.

Understanding the sources of physician dissatisfaction is important because dissatisfaction may have adverse effects on the cost, quality, and outcomes of care. Salaried employment in large medical groups may be a risk factor for physician dissatisfaction. In these settings, physician dissatisfaction can be reduced by installing administrative arrangements that protect clinical autonomy and offer reasonable work schedules and compensation. Similarly, physician job and referral satisfaction may be increased through medical school curricula and continuing education that increase tolerance for uncertainty in daily practice. This is particularly

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important with the growth of evidence-based medicine, which may actually increase the complexity of patient care and therefore the importance of this competency [2].

In this study we would also like to provide the following findings to health policy makers in Taiwan. First, the general levels of satisfaction among physicians in hospitals under the NHIP and the aspects they were satisfied and dissatisfied. Second, physician demographics and hospital characteristics were significantly associated with physician satisfaction. Thirdly, some of the attitudinal and behavioral analysis correlated of physician satisfaction and dissatisfaction through the qualitative information.

#### **A. Physician Demographics and Physician Satisfaction**

The relationship between demographic characteristics and physician satisfaction is not conclusive as reported many in the literature. The current study, however, found that age, level and salary are significantly related to physician satisfaction.

##### **Age and Satisfaction**

The discrepancy found in this study to that of some of the previous studies might be due to the fact that this study was conducted under a single-payer national health insurance plan which payment systems and market situations are far different from those the other study settings. Matter of fact, at least two previous studies which backgrounds were similar to the current study reported correlation between demographic characteristics and physician satisfaction were surveyed under the national health insurance in Canada [14] and managed care environment (HMO) in the U.S. [8]. Kravitz et al. [14] conducted a national survey in Ontario, Canada in studying physician satisfaction and reported that age was an important factor to affect the level of physician satisfaction under Ontario Health Insurance Plan (OHIP). They found that increasing age was significantly related to three of the four hypothesized satisfaction dimensions. Older physicians may have been in a better position to exert control over their conditions of practice, or they may simply have adjusted better to situations beyond their control. In current study, the finding is consistent with prior studies showing increasing satisfaction among physicians with older ages or longer time in their practice [8].

##### **Salary and Satisfaction**

Satisfaction with salary depended in part upon satisfaction with workload, which is directly tied to payment systems and manpower policies regulated by the NHIP. Most of the physicians were satisfied with their income, although they were practiced as employees with staff models in hospitals. However, we found that physicians who were generally satisfied with their income reported that they were usually dissatisfied with their workload. Moreover, we also found that physicians in the level of residents or without board certification were not satisfied with their practice at all. The low-paid salary and heavy workload were reported the two major sources of dissatisfaction.

A lack of physician in the level of resident is worse now than before. In some areas of specialties in teaching hospitals there

is even no resident at all. Most physicians complained seriously about the payment systems regulated by the NHIP that induced the manpower imbalance of physician supply. They reported the payment system of the NHIP cutting down their income, increasing their workload and breaking the equilibrium of health care marketing.

Therefore, we can conclude that the payment systems can not only affect the physicians' salary and workload but also the manpower policies. May be the interaction of payment systems and manpower policies each other will lead the market supply of physician manpower into a vicious cycle.

##### **Level and Satisfaction**

Most of the physicians in the level of residents reported that they were not satisfied with their jobs, especially in the dimensions of income, workload and status. They complained that the manpower of physician was not enough and the teaching quality was not good. They just worked as labors in hospitals and could not learn much more. Moreover, they were neither satisfied with work environment (resources) nor the external regulation of the NHIP.

From the perspective of physician in the level of resident, the dimension of workload seems to be important. Their satisfaction was greater in which those attending physicians spent a greater percentage of their time in their training opportunities. Moreover, the resident physician satisfaction was also greater in hospitals which other health professional staff spent more of their clinic time on patient care. This finding is consistent with several previous studies.

#### **B. Hospital Characteristics and Physician Satisfaction**

Besides demographic characteristics, hospital characteristics (type, location, size and management) have also been found to influence on physician satisfaction in certain dimension. Working environment was assumed as an important factor to affect physician satisfaction and their behavior formalization. Workload, patient demands, management practices and professional autonomy are all highly correlated with working environment. Different hospitals will have different missions and management style. Some are for profit and some are non-for-profit. Some hospitals are government-run and some are for religious services. Different level of accredited hospitals will set up their own mission statements. For example, district hospitals will focus on the basic level or community-related health services and take care simple or small number of patients than regional hospitals. Medical centers have more medical resources in the high technology equipment and sufficient manpower than regional hospitals, however, those physicians in medical centers have to take care more serious patients and will have more working pressure and dissatisfaction. Moreover, the NHIP will have different professional pressure or specific regulations on different levels of hospitals, for example, the payment systems and the manpower policies.

The current study found a significant correlation between hospital type and community support system (in the dimension of resources)



to satisfaction. Most of the respondents, except those who practiced in religious hospitals, reported dissatisfaction with community support system. This study also found a significant association between hospital location and income. Most physicians who practiced in Southern and Eastern Taiwan expressed dissatisfaction with their income. The study also found a significant relationship between hospital size and workload. Physicians who practiced in larger hospitals complained about their workload more than others.

### C. Hospital Management and Physician Satisfaction

Health care institutions should recognize the potential effect of physician well-being on the long-term viability of their organization dimensions of engagement and well-being should be routinely assessed as institutional performance metrics along with more standard institutional measures (eg, cost, operating income, payer mix, patient volumes, quality, patient satisfaction) so they can be monitored, their interactions with other measures assessed, and resources allocated to work-units in greatest need. deliberate and systematic efforts should be made to improve the efficiency of the practice environment and to identify, reduce, and delegate clerical work [12].

Moreover, most respondents reported dissatisfaction with their management, regardless of their demographic characteristics and hospital backgrounds. Many previous researches found that hospital characteristics will influence on the behavior formalization and satisfaction dimensions of physician including income, workload and so on, especially the variable of management [8-10].

Physician dissatisfaction might be a warning sign that the physician and/or the organization within the physician works are providing quality of care that is less than desirable. This will be true to the extent that dissatisfied physicians provide worse care and/or to the extent that physicians are dissatisfied because they believe that the conditions under which they work are obstacles to providing high quality care. However, it is possible that not all causes of physician dissatisfaction have the same implications for quality. For example, a physician who is dissatisfied because his or her income is too low may provide lower quality care, but their dissatisfaction is not in itself an indication that the conditions under which the physician works are obstacles to quality. It would be very useful for researchers to investigate the extent to which physician dissatisfaction is an indicator that quality may be poor, and to investigate whether different causes of dissatisfaction vary in their implications for quality.

Schulz et al. [8] suggested that the health care organization and its management were important to physician satisfaction. Stevens et al. [9] also emphasized that work environment satisfaction was the key factor of physician satisfaction. They both pointed out that in the aspect of management is, that in the process of bureaucratization of medical practice in hospitals, specific attention should be paid attention to the maintenance of professional autonomy and work environment in order to prevent patient demand and heavy workload. Thus, hospital characteristics (work environment), management, workload and satisfaction are

highly correlated. In the current study, the finding is also consistent with these previous researches. However, work environment and management of hospitals in Taiwan are significantly regulated by the NHIP. The suggestion is that the NHIP should not only pay much attention to the payment systems and should focus more on hospital management as well as to increase physician satisfaction.

### D. The Concept of Physician Satisfaction Dimensions

Office managed care was generally not associated with physician job or referral satisfaction. Of the physician compensation, financial incentive, and care management variables that we examined, only being a salaried employee was associated with physician job dissatisfaction. The number of physicians in the medical office had the strongest association with physician job dissatisfaction. These findings imply that the source of dissatisfaction is being an employed physician in a large medical group, which may be more likely to impose bureaucratic controls that limit physician autonomy. Primary physicians may have greater job satisfaction in smaller, less bureaucratic offices that protect their autonomy in work schedules and clinical decision-making.

In general, and summary, Physician dissatisfaction and lack of physician well-being may also affect patients indirectly. For example, dissatisfied or burnt-out physicians may be more likely to change jobs frequently or to leave medicine altogether. The costs of physician turn-over are high for both the physician and the organization that employed her. Higher costs may be passed on to the organizations that pay for medical care, and ultimately to patients. If physicians leave medical practice, they exacerbate the problem, of shortages of physicians in some specialties and geographic areas. Related, quite similar models have been published [15], though they do not explicitly distinguish between physician dissatisfaction and physician well-being [16].

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