Peer-reviewed version available at *Int. J. Environ. Res. Public Health* **2019**, *16*, 3167; doi:10.3390/ijerph16173167

The Impacts of the Hierarchical Medical System on National Health Insurance on the Resident's Health Seeking Behavior in Taiwan: A Case Study on the Policy to Reduce Hospital Visits

Yu-Hua Yan[1*], Chih-Ming Kung[2], Horng-Ming Yeh[3]

[1] Department of Medical Research, Tainan Municipal Hospital (Managed by Show Chwan Medical Care Corporation), No. 670, Chung Te Road. Tainan City, 701 Taiwan (R.O.C); e-mail:2d0003@mail.tmh.org.tw

[2] Department of Information Technology and Communication, Shih Chien University Kaohsiung Campus. No. 200 University Road Neimen, Kaohsiung 84550 Taiwan, (R.O.C.) e-mail:alex@mail.kh.usc.edu.tw

[3] Department of Internal Medicine, Tainan Municipal Hospital (Managed by Show Chwan Medical Care Corporation), No. 670, Chung Te Road. Tainan City, 701 Taiwan (R.O.C); e-mail: yehwu@ms31.hinet.net

*Correspondence: 2d0003@mail.tmh.org.tw; Tel.: +886-6-260-9926; Fax: +886-6-260-6351.

Objective: This study investigated the effect of the hierarchical medical system under the national health insurance program on resident's healthcare-seeking behavior in Taiwan. *Background:* Healthcare authorities in Taiwan initiated the allowance reduction of outpatient visits at regional hospitals and higher hierarchical hospitals from 2018. The ultimate goal is to implement a hierarchical medical system and provide the residents accessible as well as consistent medical services. *Methods:* This research was conducted through the questionnaire survey method and data were collected between August and December 2018 from the records of subjects who had recently sought medical attention. A total of 1,340 valid questionnaires were returned. *Results:* Regarding the effect on healthcare-seeking behavior, the following factors were significant: being aged between 40 to 49 ($p < .1$), subjects with an educational background of junior high school ($p < .05$), those who were not aware of the policy ($p < .001$), and an awareness about both the hierarchical medical system and the policy to reduce outpatient visits to large hospitals ($p < .001$). *Conclusion:* The public should be made aware about the hierarchical medical system to improve healthcare.

Keywords: hierarchical medical system, national health insurance, healthcare-seeking behavior, reduction in hospital visits

1. Introduction

Taiwan's current healthcare system is divided into four levels: medical centers, regional hospitals, district hospitals, and clinics. After the implementation of the National Health Insurance (NHI) program in 1995, the convenience of seeking different healthcare facilities was based on the accessibility to healthcare services. The current NHI program discourages unnecessary healthcare-seeking behavior based on greater patient choice, easy access, and low medical cost burden [1]. Unnecessary healthcare-seeking behavior also leads to a waste of medical resources. The personal care expenditure of NHI increased from 252 billion in 1998 to 595.3 billion in 2016, indicating a growth of

Peer-reviewed version available at Int. J. Environ. Res. Public Health 2019, 16, 3167; doi:10.3390/ijerph16173167

2.36 items. Healthcare expenditure by clinics has also increased, from 162.7 billion points in 1998 to 392.4 points in 2016, a growth of 141.2%. The average healthcare cost per person per visit has also risen annually. From the trend of NHI revenues and expenditures, safety reserves are expected to be used up by 2120, and Taiwan will face pressure to adjust NHI premiums, a challenge that is exacerbated because the country is now in an economic recession. The income levels of employees and the insured do not increase, and there are limits to the growth in gross domestic product. If prices are constantly rising, the public and hospitals must jointly reduce expenditures on unnecessary healthcare in order to avoid the increase in NHI premiums [2].

When the NHI program was introduced, the essence of the "medical referral system and hierarchical medical system" was included in the National Health Insurance Act. After the implementation of the NHI program, hospital crowding regardless of disease severity resulted in sweat hospitals and overcrowded emergency rooms; meanwhile, district hospitals were shutting down [3]. According to the number of outpatient visits at each healthcare level, in 2006, 70.2% of personal healthcare expenditures were used in clinics of basic Western medicine, while 11.2, 10.2, and 8.4% went to district hospitals, regional hospitals, and medical centers, respectively. In 2016, however, personal healthcare expenditures used in clinics of Western medicine and district hospitals decreased by 64.7 and 9.7%, respectively, while outpatient visits to regional hospitals and medical centers increased by 14.8 and 10.8%, respectively [2].

Hence, the government of Taiwan has promoted a hierarchical medical system to enable medical centers and regional hospitals to refocus on the fundamental areas of teaching, research, care for emergency cases and difficult diseases. Since 2017, the growth in the numbers of outpatient visits for minor ailment services at medical centers and regional hospitals was limited; the number of outpatient visits could not exceed 90% of those in 2016 or the NHI program would not reimburse. As a result, the upcoding of diagnosis for minor ailments by hospitals to reduce the number of patients under primary care was instituted to respond to the cut in reimbursement. Those limits were not effective, and in 2018, the Ministry of Health and Welfare established a hierarchical medical system and medical referral systems to promote reduced outpatient visits to large-scale hospitals, to cut by 2% outpatient visits to medical centers and regional hospitals in 2018, and to reach the target of a 10% reduction within 5 years. The facilities that fail to reach the target will not be reimbursed by the NHI program [4].

The hierarchical medical system implemented internationally requires restricting patients' freedom of choice. The optimal allocation of medical and healthcare resources improves public health, accessibility to care, and healthcare efficiency, and may even resolve health inequality [5-6]. With regard to the current NHI policy in Taiwan, however, government officials only care for votes, and no one is willing to engage in reform. Patients are encouraged to engage in potential doctor shopping and receive only fragmented healthcare services [7]. To enable each level's healthcare institution to return to a normal medical ecosystem and to entice patients with minor ailments to visit local clinics, we have to gradually implement a hierarchical medical system and bi-directional referral systems [8].

Currently, some countries, such as Germany, allow upgraded healthcare access and face increased healthcare expenditures than other countries, such as the United Kingdom, which requires referral to a clinic [9-10]. Chen [11] pointed out that when a government allows the coexistence of "medical expense paid by the public sector" and "self-paying" under the NHI program, the ability of people to pay determines healthcare service contents and quality. These patients can enjoy items not

Peer-reviewed version available at Int. J. Environ. Res. Public Health 2019, 16, 3167; doi:10.3390/ijerph16173167

covered by NHI programs; however, there is a risk involved because the disadvantaged may be excluded from access to medical resources. Those with high consumption power are more likely to choose to visit medical centers, and those with lower consumption power would prefer to visit local clinics, a situation that does not fit with the relative equality principle of social welfare and is against the policy goal of social insurance. In addition, when patients with minor ailments are accustomed to visiting large hospitals, they are less likely to trust small hospitals or clinics when there is an emergency, which reflects a distrust in local clinics [12].

The NHI program in Taiwan guarantees the right of people to seek healthcare regardless of their financial status and the freedom to choose healthcare providers. Because of fierce competition and fees for services in the system, medical institutions aim to increase the number of cases attended to. Healthcare-seeking behavior generally refers to the freedom of patients to choose their own hospitals or physicians [13]. Wang [14] proposed that healthcare-seeking behavior is demonstrated by the public when they choose healthcare services provided by healthcare institutions after an evaluation conducted according to their own medical information and knowledge or to that acquired from healthcare social media. Berkowitz and Flexner [15] suggested four factors that influence healthcare-seeking behavior: care quality, cleanliness of facilities, service attitude, and hospital reputation, while Boscarino and Steiber [16] categorized the factors of consideration in the order of convenience, physician, professionalism, and facilities.

Healthcare authorities in Taiwan initiated the allowance reduction of outpatient visits at regional and higher hierarchical hospitals in 2018. As per this, the allowance of outpatient visits at regional hospitals and medical centers will be reduced by 2%, followed by a total of 10% reduction over 5 years. The ultimate goal is to implement a hierarchical medical system and provide the residents accessible as well as consistent medical services. The research investigating the novel policy "allowance reduction of outpatient visits" in Taiwan is still lacking. Most previous studies focused on the referral system rather than the effects of the hierarchical medical system on the healthcare-seeking behavior of Taiwanese residents. This study investigated the effect of the hierarchical medical system under the NHI program on healthcare-seeking behavior in Taiwan. A total of 1,000 questionnaires were released in September and October 2018 to members of the general population seeking medical care. The results were analyzed by a multiple regression model to further understand the actual performance of the NHI policy so that it can be the reference for the government to promote the hierarchical medical system in the future.

2. Materials and Methods

2.1Research sample and source of data

The research adopted a cross-sectional study, and data were collected between August and December 2018 from subjects with recent healthcare-seeking records. Before the questionnaires were distributed, oral questions were asked, and a purposive sampling technique was used. Data were collected via face-to-face interviews. During the questionnaire distribution, if any subject was unwilling to participate in or not qualified for the research, interviewers looked for the next eligible subject using the sampling principle. To train the interviewers, three students from the Department of Hospital Administration were hired, and a half-day training session was conducted before the questionnaire survey. A total of 1,340 copies of valid samples were collected.

2.2Research tool

Peer-reviewed version available at Int. J. Environ. Res. Public Health 2019, 16, 3167; doi:10.3390/ijerph16173167

The research examined the effects of the hierarchical medical system on healthcare-seeking behavior in Taiwan by referring to four factors of consideration proposed by Berkowitz and Flexner [15] using a Likert 5-point scale. In terms of level of agreement, 5 indicated very much agree, while 1 represented very much disagree. The research structure was proposed to discuss the effect of patient characteristics, the hierarchical medical system, and the policy to reduce outpatient visits to largescale healthcare institutions on healthcare-seeking behavior, while the structured questionnaire was used to conduct face-to-face interviews with research subjects.

Expert validation was conducted to evaluate the content validity of the research questionnaire, and modifications were made according to expert opinion. For questionnaire reliability, internal consistency was tested. A questionnaire pretest using 30 copies was conducted onsite before formal interviews, and Cronbach's α fell in the acceptable range of .8. Personal attributes included variables of gender, age, marital status, educational background, and occupation. Cronbach's α analysis was also conducted to assess reliability of healthcare-seeking behavior; Cronbach's α coefficient was .826. indicating high reliability.

2.3Data processing and analysis method

This research used SPSS 18.0 to conduct data analyses, and in addition to descriptive statistics, the chi-square test was used to examine significant differences of the hierarchical medical system and the policy to reduce outpatient visits to large-scale hospitals with regard to personal attributes. A regression analysis about the relevance of two or more independent variables and one dependent variable was introduced to predict awareness of the hierarchical medical system and healthcare-seeking behavior to build a prediction model.

3.Results

3.1Analyses of basic information of research subjects

Among the 1,340 subjects, there were 779 women participants (58.1%) and 561 men participants (41.9%). Of the women subjects, 15.3, 26.3, and 16.5% were not aware of, partly aware of, or completely aware of the hierarchical medical system and the policy to reduce outpatient visits to large hospitals, respectively; with regard to the men subjects, percentages of awareness were 11.2, 20, and 10.7%, respectively. In the age group $\geqq$ 60, most of them (7.9%) were not aware of the policy, while those who were aware also accounted for the lowest percentage (3.1%); in the age group $\leqq$ 29, the majority (8.4%) were aware of the policy, while the lowest percentage of awareness (1.3%) was also found. In terms of marital status, most married people were not aware of the policy (15.9%), and those who were single were more aware of the policy (13.1%). Regarding annual income, most people with an income between NTD 210,000 and 400,000 were not aware of the policy (7.3%), while the highest level of awareness was also found in this group (6.9%). For educational background, those with college degrees were not aware of the policy (15.3%); this group also had more subjects that were aware of the policy (16.8%). Because of the sample size, lower percentages of awareness were identified among those with educational backgrounds of junior high, senior high, or graduate school. In terms of occupation, most of the subjects worked for private organizations, and therefore, higher percentages were found for low and high awareness. Participants also included students, military and public servants, and housewives. Table 1 shows the results of personal attributes according to the chi-square test: gender ($p = 0.486$), age ($p < 0.001$), marital status ($p < 0.001$), educational background ($p < 0.001$), annual income ($p < 0.001$), and occupation ($p < 0.001$).

Peer-reviewed version available at Int. J. Environ. Res. Public Health 2019, 16, 3167; doi:10.3390/ijerph16173167

TABLE 1 Hierarchical medical system and reduce outpatient visits to cognitive analysis (N=1,340)

Measure	Not aware	%	Were partially	%	Completely aware	%	χ^2
Gender							.486
Women	205	15.3	353	26.3	221	16.5	
Men	150	11.2	268	20.0	143	10.7	
Age (years)							<.001
≦29	18	1.3	95	7.1	112	8.4	
30-39	57	4.3	131	9.8	109	8.1	
40-49	76	5.7	150	11.2	50	3.7	
50-59	98	7.3	107	8.0	51	3.8	
≧60	106	7.9	138	10.3	42	3.1	
Marital status							<.001
Single	121	9.0	221	16.5	176	13.1	
Married	213	15.9	368	27.5	174	13.0	
Divorced	21	1.6	32	2.4	14	1.0	
Annual income							<.001
No income	80	6.0	142	10.6	71	5.3	
≦NTD 200,000	24	1.8	87	6.5	69	5.1	
NTD 200,001~400,000	98	7.3	164	12.2	93	6.9	
NTD 400,001~600,000	73	5.4	130	9.7	73	5.4	
≧NTD 600,000	80	6.0	98	7.3	58	4.3	
Educational level							<.001
Junior high school	18	1.3	14	1.0	21	1.6	
Senior high school	99	7.4	210	15.7	77	5.7	
University	205	15.3	361	26.9	225	16.8	
Graduate School	33	2.5	36	2.7	41	3.1	
Occupation							<.001
Students	50	3.7	113	8.4	89	6.6	
Military and public servants	59	4.4	57	4.3	33	2.5	
Private organizations	171	12.8	276	20.6	183	13.7	
Worked	44	3.3	83	6.2	27	2.0	
Others	31	2.3	92	6.9	32	2.4	

3.2Analyses of the impact of the hierarchical medical system and the policy to reduce outpatient visits to large hospital on resident's health seeking behavior

This study further analyzes and compares the impact of hierarchical medical system and the policy to reduce outpatient visits to large hospitals on healthcare seeking behavior. When conducting a regression analyses of the control variables and independent variables, we identify the possible problem collinearity. Relevant variance inflation factors (VIF < 10) and condition index (CI < 10) were

Peer-reviewed version available at Int. J. Environ. Res. Public Health 2019, 16, 3167; doi:10.3390/ijerph16173167

first tested to avoid the problem of collinearity. For variance of regression model of healthcare seeking behavior, F statistics is shown as 15.317($p < 0.001$); as shown in the Table 2 regression model, for the impact on healthcare seeking behavior, the age group of 40-49 ($p < 0.1$), subjects with educational background of junior high school ($p < 0.05$), those who were not aware of the policy($p < 0.001$), and, and the awareness towards hierarchical medical system and the policy to reduce outpatient visits to large hospitals ($p < 0.001$) reached significant levels.

TABLE 2 Analyses of the impact of the hierarchical medical system and the policy to reduce outpatient visits to large hospital on resident's health seeking behavior

Measure	Healthcare-seeking behavior	
	Beta	*t*
Gender (RG: Womens)		
Mens	.001	.043
Age (RG:≧60)		
≦29	-.035	-.744
30-39	-.001	-.038
40-49	-.060	-1.832*
50-59	.005	.161
Marital status (RG: Single)		
Married	.015	.418
Divorced	.008	.269
Annual income (RG: No income)		
≦NTD 200,000	-.041	-1.303
NTD 200,001~400,000	.020	.397
NTD 400,001~600,000	-.026	-.534
≧NTD 600,000	-.017	-.345
Educational level (RG: University)		
Junior high school	-.082	-3.001**
Senior high school	-.014	-.456
Graduate School	.042	1.543
Occupation (RG: Private organizations)		
Students	-.064	-1.289
Military and public servants	-.022	-.798
Worked	.050	1.322
Others	-.019	-.685
Policy understanding (RG: Were partially)		
Completely aware	-.032	-1.166
Not aware	.119	4.243***
Independent variable		

Peer-reviewed version available at Int. J. Environ. Res. Public Health 2019, 16, 3167; doi:10.3390/ijerph16173167

The awareness towards hierarchical medical system and the policy to reduce outpatient visits to large hospitals	.405	15.894***
R^2		.188
Adj. R^2		.176
F values		15.317
P values		<.001

Note: *** p<0.01, ** p<0.05, *p<0.1

4.Discussion

This study is the first one that discusses the relevant influential factors of hierarchical medical system and the policy to reduce outpatient visits to large hospitals on healthcare seeking behavior. Research result shows that about 26.5% of citizens in Taiwan regardless of their gender, age, or educational background were not aware of the government's efforts to promote hierarchical medical system and the policy to reduce outpatient visits to large hospitals. The power of policy enforcement determines the public awareness level. Wu [17] discussed that policy marketing is critical to policy implementation and all political affairs including both the interior and foreign diplomacy or central and local government should build a consensus through policy marketing for effectiveness.

Second, significance has been found in healthcare seeking behavior among those at different age groups and with various educational backgrounds corresponding to research findings of Chang *et al* [18]. The age groups of 40-49 years old $\geqq$ 60 years old and those with educational background of junior high school and college demonstrate negative significance; those in the age group of $\geqq$ 60 years old and those with educational background of college are more likely to be influenced in terms of healthcare seeking behavior compared to those in the age group of 40-49 years old and those with educational background of junior high school. It is possible that the elderly is more likely to develop chronic diseases and they have their own preferences in healthcare seeking. Those with higher educational backgrounds are more likely to use the Internet to search for medical information and relatively, healthcare seeking behavior is more likely to be influenced.

Furthermore, a certain significance has also been identified among the impact of low awareness towards hierarchical medical system and the policy to reduce outpatient visits to large hospitals on healthcare seeking behavior and this result is similar to the research finding of Chang [19] that suggests that from the perspective of healthcare provider, influential factors of hierarchical medical system include negotiation role of medical institutions (44%), policy (22%), connectivity of medical information system (20%), and healthcare insurance (14%); from the view of the public, hierarchical medical system needs to mainly consider the insufficient capability of physician (29%), influence of freedom to choose healthcare (25%), and insufficient equipment of clinics (17%). Chen and Lin [20] as well as Hsieh *et al.,* [21] thought that when there is a health problem, the public demonstrates a higher return visit rate to hospitals about which they are impressed of their services. Hospitals have taken more outpatient visits provided by local clinics and harmed the medical referral system; hospitals and clinics do not trust each other and that leads to a dislocation of Taiwan's medical resources [20-21]. The study of Lin and Liu [22] also showed that after the introduction of the NHI Act, even patients with stable conditions would choose to make their return visits to large hospitals instead of the original local clinics. As a result, if concerns of healthcare provision and the public are not addressed, it is not possible to see the success of the promotion of hierarchical medical system.

Peer-reviewed version available at Int. J. Environ. Res. Public Health 2019, 16, 3167; doi:10.3390/ijerph16173167

6.Conclusion and Suggestion

Over the past years, hierarchical medical system has been a goal of Taiwan's healthcare policy. Since 2005, the National Health Insurance Administration began promoting bi-directional medical transfer system with the attempt to increase the return visit rate of patients to local clinics and reduce outpatient visits of patients with minor ailments to large hospitals. In fact, the return visit rate to local clinics is still low. Based on their past visit experience and impressions towards healthcare institutions, especially, when the patient-physician relationship is maintained strongly, the loyalty of patients toward that physician will be reinforced [23]. Reasons for a patient to choose a hospital include equipment, medical skill, recommendation made by friends and families, distance from home and transportation. Today with the convenient traffic network, traveling to regional hospitals and medical centers is often less than ten kilometers [24]. Compared to clinics, large hospitals have more comprehensive medical equipment and diverse medical departments but this also indicates the weak functions of Taiwan's local clinics [18].

Healthcare system and revolution background of each country have brought different impacts on social development. In Taiwan, although the medical transfer system and family doctors are available, medical resources are not integrated and there have been no coordinative measures. Family doctors fail to play the role of gatekeeper, the public often chooses outpatient visits to hospitals, and it is difficult to avoid treatment of minor ailments at large hospitals. Thus, it is especially important to restrict freedom of healthcare seeking for the implementation of the hierarchical medical system.

In the end, empirical results of this study also find that approximately three fourths of subjects were not aware or only party aware of the NHI policy. The main purpose of hierarchical medical system is to lead a change in healthcare seeking behavior, improve efficiency, differentiate healthcare services, and promote labor division. As a result, this study suggests the competent authority of health administration work more on policy promotion to let the public become aware of and understand the hierarchical medical system to resolve the issue of upgrading healthcare seeking.

Acknowledgments: We appreciate the Tainan Municipal Hospital (Managed by Show Chwan Medical Care Corporation) Research Fund and the participating pharmacists' assistance in completing the questionnaires so that the study can be completed successfully.

Author Contributions: Yu-Hua Yan initiated the research, collected data, conducted the analysis and wrote the manuscript. Liang-Hsi Kung contributed to the design of the study, provided critical reviews of the manuscript and contributed to interpretation of the results.

Conflicts of Interest: The authors declare no conflict of interest.

The study design was reviewed and approved by the Institutional Review Board (IRB No. 1070403).

Reference

1. Hong, Y. C.; Lin, J. H. Patient Choice and Practitioner Referral. *Rev. Soc Sci.* ***2008***, *2*, 61-89.
2. Lee, P. C.; Chang, Y. P.; Lin, Z. L.; Fan, S. J.; Zhan, C. F.; Parng, I. M.; Tsai, S. L. From health insurance big data analysis, to the road of health insurance reform. *Taiw Med J.* ***2017***, *60*, 8-13. (In Chinese)
3. Yang, C. M. The Regulatory Carrots and Sticks of the Referral System under the. National Health Insurance. *Angle Health Law Rev.* ***2017***, *11*, 19-30. (In Chinese)
4. Ministry of Health and Welfare. The total amount and distribution of medical expenses for the year 2018. 2018. Available online:

Peer-reviewed version available at Int. J. Environ. Res. Public Health 2019, 16, 3167; doi:10.3390/ijerph16173167

https://www.nhi.gov.tw/Content_List.aspx?n=0404F75C81EB1977&topn=D39E2B72B0BDFA15 (accessed on 12 March 2018)

5. Murray, M.; Berwick, D. M. Advanced access: reducing waiting and delays in primary care. *J. Ame Med Assoc.* ***2003***, *289*, 1035-1040.
6. Mayberry, R. M.; Nicewander, D. A.; Qin, H.; Ballard, D. J. Improving quality and reducing inequities: a challenge in achieving best care. *Proceedings / Baylor University Medical Center.* ***2006***,*19*, 103-118.
7. Chen, C. C.; Cheng, S. H. A literature review of continuity of care. Taiw *J. Public Heal.* ***2013***, *32*, 116-128. (In Chinese)
8. Lee, P. C. *Promote levels of care, there is a chance to change at the beginning*. China Times. 2017. Available online: http://magazine.chinatimes.com/globalbio/20170321001947-300222 (accessed on 2 March 2018)
9. Forrest, C. B. Primary care gat keeping and referrals: effective filter or failed experiments? *Brit Med J*,***2003***, *326*, 692-697.
10. Forrest, C. B.; Nutting, P. A.; von Schrader, S.; Rohde, C.; Starfield, B. *Primary care physician specialty referral decision making: patient, physician, and health care system determinants*. *Med Decis Making*. ***2006***, 26, 76-85.
11. Chen, T. C. *The Effect of Out-of-Pocket Expenditure on the Seeking Behavior in a Hierarchical Medical Care System: The Multinomial Logit Model*. Unpublished master's thesis, National Chi Nan University, Taiwan, ROC, 2013. (In Chinese)
12. Lee, J. X. Forced patient transfer is an emergency congestion solution. *Common Heal Mag.* ***2016***, *209*, 100-102. (In Chinese)
13. Andersen, R. M. Revisiting the behaveioral model and access to medical care: Does it matter?. *J. Health. Behav.* ***1995***,*36*, 1-10.
14. Wang, B. H. *The behavior pattern of patients seeking medical treatment on medical community websites*. Unpublished master's thesis, National Chung Cheng University, Taiwan, ROC. 2016. (In Chinese)
15. Berkowitz, E. N.; Flexner, W. A. The Market for Health Care Services: Is There a Non-Traditional Consumer? *J. Health Care Market*.***1981***, *1*, 25-34.
16. Boscarino, J.; Steiber, S. R. Hospital Shopping and Consumer Choice, *J. Health Care Market*. ***1982***, *2*, 23-25.
17. Wu, D. *Policy management*. Taipei: Linking publishing. 2003.
18. Chang, B. W.; Chang, C. C.; Wu, J. J.; Lin, C. H.; Feng, C. K. Study from Consumer View on the Quality Estimatin and Satisfaction Analysis to Primary Care System in Taiwan. *J. Manage. Practices. Principles.* ***2016***, *10*, 53-70. (In Chinese)
19. Chang, R. Z. Medical Safety and Quality Seminar Series - Grading Medical. *Taiw Med J.* ***2017***,*60*, 22-27. (In Chinese)
20. Chen, C. C.; Lin, H. C. Influences on Willingness of Primary Care Physicians Make Patient Referrals in Taiwan. *J. Health Sci.* ***2004***, *6*, 414-428.
21. Hsieh, B. S.; Chen, C. Y.; Chiu, T. Y.; Liao, H. J. The future development of primary care. *Med qual mag.* ***2008***, *2*, 32-35. (In Chinese)
22. Lin, P. J.; Liu, Y. C. Factors Influencing the return-visit Rate for Referred Patients in a Community to Their Primary Care Clinics. *Taiw J. Public Heal.* ***2010***, *29*, 228-237. (In Chinese)

Peer-reviewed version available at *Int. J. Environ. Res. Public Health* **2019**, *16*, 3167; doi:10.3390/ijerph16173167

23. Roberge, D.; Beaulieu, M. D.; Haddad, S.; Lebeau, R.; Pineault, R. Loyalty to the regular care provider: patients' and physicians' views. *Fam Pract.* ***2001***, *18*, 53-59.
24. Shi, Z. M.; Hsu, E. D. Correlation between the reasons for emergency hospital transfer and the improvement of medical quality in regional hospitals: A case study of a hospital in central Taiwan. *Taiw Med J.* ***2016***, *59*, 50-54. (In Chinese)