The Mediation Role of Universal Healthcare Coverage in the Effect of National Health Insurance System on Perceived Satisfaction with Health Service Quality

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Abstract: The absence of universal healthcare coverage (UHC) can have ripple effects on human life and a nation's wellbeing. The implementation of national health insurance system (NHIS) as a social security system that guarantee healthcare cost for subscribers and their dependents tends to safeguard life and mitigate the catastrophic effects of healthcare expenditure. The purpose of this study was to examine the effects of NHIS, universal healthcare access (UA) and financial risk protection (FRP) on perceived satisfaction with health service quality (PSHSQ) taking into account the mediation role of universal healthcare coverage.

Methods: Primary data for this study consists of administration of structured questionnaires among 300 respondents in Busan, South Korea based on health insurance enrollment. The effects of the antecedent constructs on the mediator and consequent construct were established through pre-hypotheses analysis such as reliability, convergent and discriminant validity tests and model fit analysis. The application of model modification indices were used as contingency measures to increase the adequacy of the hypothesized model. A covariance based structural equation model was employed to analyze the hypothesized effects. The mediation effects were established based on bias-corrected bootstrap at 95% confidence interval.

Results: The results indicated that NHIS, UA, FRP had significant effects on UHC. There was partial mediation effect of UHC in the relationships between NHIS, UA and PSHSQ. However, UHC fully accentuated the effect of FRP on PSHSQ as a result of the relatively high mandatory monthly insurance contributions.

Conclusions: The empirical evidence proved that Korea's obligatory NHIS have positive effect on PSHSQ. The mandatory enrollment on NHIS in Korea facilitate vertical and horizontal redistribution effects which provide social security and also enhances health conditions.

Keywords: National Health Insurance, Universal Access, Financial Risk Protection, Universal Healthcare Coverage, Health Service Quality.

I. INTRODUCTION

The extension of National Health Insurance System (NHIS) in the Republic of Korea to cover the entire population in 1989 paved the way for every individual to receive healthcare at all medical facilities nationwide. Prior to this initiative, the initial mandatory public NHIS that was enjoyed by employees at large companies which was introduced in 1977 accounted for only 20% of health expenditure in 1980 (Jones, 2010; Boateng, 2017). According to Jones (2010), Korea's expenditure rate for supporting national health insurance finance was the lowest health spending in the Organization for Economic Co-operation and Development (OECD) area in 1980, which led to high medical treatment burden on patients.

In spite of the relatively high medical treatment costs, Korea's mandatory health insurance system, which has achieve universal coverage through the provision of benefits for all people is getting worldwide recognition for its leading role in

healthcare financing for individuals and households. It has been argued that mandatory subscription to health insurance should be prerequisite for the fulfillment of universal health coverage, since it considers the medical security of all residents in a country. The Korean health insurance program compels all adults who meet the legal requirements to subscribe to the insurance system. Through the implementation of mandatory NHIS, it took only 12 years for Korea to achieve universal coverage for its population (Kwon, 2008; Jeong, 2010). The rationale behind mandatory subscription is to enhance the effectiveness and efficiency of managing the health insurance system as well as promotion of social solidarity due to the absence of optional enrollment which prevents adverse selection that usually take place between insurers based on benefit plans in most liberal markets.

The recent paradigm of growing interest in universal welfare have ignited the recognition of universal healthcare as a basic right for people in all nations that ensure healthy living conditions. This assertion is supported by many studies such as Oxfam (2013), Sachs (2012), and Stuckler et al. (2010), who have emphasized the need for every national health insurance system to have universal coverage by granting universal access (UA) to healthcare and protect individuals and households from catastrophic health expenditure. The healthcare cover rate enshrined within the health insurance system goes a long way to determine equal access to quality healthcare and financial risk protection (FRP) against high out-of-pocket payment burden that arises from healthcare. The absence of UA and FRP can affect the ability of individuals to meet their healthcare needs which will in turn influence residents' general satisfaction with the quality of health services. Thus, the provision of NHIS, UA and FRP affects UHC and indirectly impacts on residents' economic and health conditions and also their reactions towards existing healthcare services.

This study empirically examines the mediation role of universal healthcare coverage in the structural linkages in the perceived effects of national health insurance system enrollment, universal access and financial risk protection on residents' satisfaction with health service quality.

II.   CONCEPTUAL FRAMEWORK AND HYPOTHESES

(1) Relationship between NHIS, UA, FRP on UHC and PSHSHQ:

The traditional theories behind health insurance implementation are based on assumptions which explain the likelihood of people to averse the perceived risk associated with healthcare cost when initial premiums can mitigate such future financial expenditure. Gapenski (2007), asserts that the law of large numbers which postulate that average behavior of a group of individuals are more predictable than that of an individual motivate insurance companies and governments to implement health insurance policies as it enables them to predict the level of claims. Studies by Jowett (2004), have also emphasized that implementation of national health insurance is influenced by conventional political economy theories.

The concept of universality in healthcare implies that people should be able to access the needed health promotion, prevention, treatment, rehabilitation and other related healthcare services and these services should be of good quality. Equity in healthcare emphasizes the elimination of financial risk and difficult situations as a result of out of pocket payment from individuals who access healthcare services (UNSDSN, 2015). The purpose of NHIS implementation is to realize universality and equity in health insurance through the accomplishment of universal access, financial risk protection and universal health coverage. The effect of NHIS enrolment on satisfaction with health service quality are intertwined by adequacy of the healthcare package, direct healthcare cost on individuals and population coverage. Though the implementation of NHIS is likely to have an inverse relationship with UA and FRP, NHIS is expected to influence the level of UHC which seeks to ensure that all people obtain the health services they need without encountering financial risk and hardships as a result unaffordable out-of-pocket payments (WHO, 2013).

(2) Effects of NHIS, UA and FRP on UHC:

The implementation of NHIS has a relationship with UA since it ensures that people actually get the chance to obtain the healthcare services they need and benefit from financial risk protection. UA is the opportunity or ability to get universal healthcare. Hence, the accomplishment of universal health coverage is not possible without the presence of universal access. The variations in UA and UHC are based on their scope and roles. While the former focus on the benefits of all citizen from a supporting medical security, the latter emphasize the process of attaining health services. However, Stuckler et al. (2010), indicated that the term UHC has been equated to UA in several studies. The two concepts were separated in this study based on the role of each construct.

According to several studies (Tanahashi, 1978; Penchansky et al., 1981; Shengelia et al., 2005; Thiede et al., 2007), UA has three dimensions. The aspect of physical accessibility is understood to be the availability of good health services within reasonable reach of those who need them and it borders on opening hours, appointment systems and other aspects of service delivery organization that allow people to obtain the needed services. The dimension on financial affordability is related to a measure of people's ability to pay for services without incurring financial hardship. It includes price of health services, indirect cost and opportunity cost which are influenced by the wider health financing system and household income level. The dimension on acceptability borders on people willingness to seek for healthcare services. Acceptability can be affected by perceived service ineffectiveness, social and cultural factors such as language, age, gender, ethnicity or religion of the health provider which can discourage people from seeking services. In addition, an extensive literature review on health insurance cover rate revealed that there are spatial, financial and medical cover rates that determine the level of universal health coverage in health insurance (WHO, 2010).

Paradoxically, Kutzin et al. (2010), UHC Cube proposes that universal coverage in health systems progressively move in four direction which include service packages that cover the entire population, an increased share of pooled funds accounting for the main source of health funding for healthcare, and eventual reduction in co-payments by those accessing the healthcare services.

Yawson (2013) and Kwon (2009), emphasized that an NHIS seeks to protect from people catastrophic health expenditure and financial risk which is likely to arise from payment of excessive healthcare cost. It seeks to reduce direct out-of-pocket payments (OPP) through insurance pre-payment and risk pooling activities. Studies have revealed that the presence of health insurance positively influence universal access and reduction in catastrophic health expenditure. Catastrophic health expenditure occurs when OPP for healthcare cost exceeds 40% of household payment capacity based total living costs with the exception of grocery (foodstuff) expenditure. A household's capacity to pay is defined as effective income remaining after basic subsistence needs have been met. Effective income is taken to be the total consumption expenditure of the household, which in many countries is a more accurate reflection of purchasing power than income reported in household surveys (Xu et al., 2013). Among the indirect indicators are the proportion of an individual's OPP to the total health expenditure and the proportion of government health expenditure in relation to GDP (WHO, 2010). The concept of financial risk protection through health insurance is underpinned by the ex-ante decision model which emphasizes that an individual pays a fair premium when he or she is healthy in exchange for transfer of cost burden when in need of healthcare services. This allows subscribers to mitigate high cost associated with ill-health. The ex-post consumption models also apply after subscribers utilize healthcare services (Nyman, 2005). The aforementioned issues augmented the formulation of the following hypotheses.

H_1: NHIS have significant effect on UHC

H_2: UA have significant effect on UHC

H_3: FRP have significant effect on UHC

(3) Effect of NHIS, UA and FRP on PSHSQ:

The discussion on satisfaction with the quality of health services was conducted based on a review of key customer satisfaction models to conceptualize the issues that inform this study. It was observed that traditional macro-models of customer satisfaction identified satisfaction as a feeling in a state of mind or an attitude. As per Hom (2000), the components of such models include an individual's perceived performance, comparison standards, perceived disconfirmation to satisfaction feelings and outcomes of satisfaction feelings. Paradoxically, Woodruff and Gardial (1996), sought to relate customer value chain to customer satisfaction. It was postulated that value is the driving force in product choice and satisfaction is related to a brief psychological reaction to a component in the customer value chain.

In terms of measurement, Le and Chung (2008), emphasized that the Swedish Customer Satisfaction Barometer (SCSB) was the first national level model developed to measure customer satisfaction among consumers. The components of the SCSB consist of perceived performance and customer expectation which serve as antecedent of customer satisfaction. Customer satisfaction is preceded by customer complaints and customer loyalty. They concluded that an increase in customer satisfaction can lead to decrease in complaints and increase in customer loyalty. In addition, a review on the American Customer Satisfaction Index (ACSI) showed that it is a cause-and-effect model that consist of six distinctive but interdependent components. The key components are customer expectation, perceived quality, perceived value, customer satisfaction, customer complaints and customer loyalty. In the ACSI, customer expectation (CE) is a measure of

the customer's anticipation on the quality of a company's product or service. The expectations ranges from prior consumption experiences which includes advertisements and positive or negative word-of-mouth and prediction of an industry's potential to provide quality service in the future. Perceived quality (PQ) reflects a measure of the customers' evaluation through recent consumption experience on the quality of the product or service. Perceived quality is the extent to which a service meets the customers' individual needs (customization) and the frequency at which things go wrong with a service (reliability). Perceived value (PV) is a measure of quality in relation to price paid. Customer complaints (CC) is the percentage of respondents who indicate that they have complained to a service provider directly about the services received within a defined period of time. On the other hand, customer loyalty (CL) is a combination of the customer's professed likelihood to repurchase a service or product from the same provider or supplier in the future and the likelihood to purchase the same service or product at various price points or price tolerance (www.theacsi.org04/2015).

Customer expectation (CE) and perceived quality (PQ) were employed in the determination of residents' satisfaction with health service quality. The outcome of residents' satisfaction can result in residents' complaints which influences residents' loyalty. Embedded within the issues of residents' complaints and loyalty are the challenges encountered by residents' when using NHIS. Though health insurance cover alone might not influence satisfaction with service quality, it was important to examine the effect of NHIS subscription on satisfaction with the health service.

As per the NHI Enforcement Act (2013), enrolment onto NHIS is a compulsory mutual assistance system which disregard differences based on wealth and purposively ensures that citizens receive medical service benefits and it contributes to citizens' health promotion and social solidarity. The presence of a health care financing system that is physically accessible, financially affordable and acceptable by subscribers' is likely to enhance health residents' satisfaction with health service quality. According to Xu et al, (2003), countries with a higher share of out-of-pocket payments in relation to total health expenditure are more likely to have the probability of households facing catastrophic expenditure after controlling for other possible determinants. It has been indicated that 1% increase in the proportion of total health expenditure as a result of out-of-pocket payments is associated with an average increase in the proportion of households facing catastrophic payments by 2% (Xu et al, 2003). Given that customers who face catastrophic health expenditure might be disappointed when coping with health costs, social institutions such as social insurance or tax-funded health systems that protect households from catastrophic health expenditure are expected to contribute to enhancing the satisfaction with health services. The existence of UA and FRP facilitate UHC which will further influence PSHSQ. The following hypotheses are advanced based on the above discussion.

H_4: NHIS have significant effect PSHSHQ

H_5: UA have significant effect on PSHSQ

H_6: FRP have significant effect on PSHSQ

H_7: UHC have significant effect on PSHSQ

(4) Mediation role of UHC on NHIS, UA, FRP and PSHSQ:

In order to examine the mediation[1] effect of UHC in the relationship between NHIS, UA, FRP and PSHSQ, two linkages in the model must be supported: NHIS, UA, FRP and UHC, and UHC to PSHSQ. It is worth noting that, little research has explored the mediation effect of UHC on NHIS, UA, FRP and PSHSQ. A closer look at the literature reveals that UHC offer considerable potential for achieving PSHSQ because it inclusively grant same level of healthcare access to all citizens when the need for such services arise. UHC also plays an important role because it solve the healthcare problems individuals and their household members who are likely to face impoverishment due to medical needs (Xu et al, 2013). This rationale is supported by Kawabata et al. (2002), who demonstrated that there should be a decrease in the basic living expenditure in order for households to deal with healthcare cost especially when the capacity to pay exceeds 40% of household expenditure. Though studies by the WHO (2010) and Yawson et al. (2013) have revealed that there is a positive relationship between NHIS, UA, FRP and PSHSQ, there is lack of adequate knowledge on the mediation of UHC on NHIS, UA, FRP and PSHSQ.

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[1] Mediation effect is from a cause model that seeks to identify and explicate the process that underlines an observed relationship among an independent variable through an inclusion of a third explanatory variable known as the mediator variable. The mediation role clarifies the nature of the relationship between independent and dependent variables and it can be expressed as X leads to M leads to Y, where X is the independent variable, M is the mediator variable and Y is the dependent variable. (Barron and Kenny, 1986; Kenny, 2015; Cohen et al, 2003).

Conclusively, UHC is expected to mediate between mandatory NHIS, UA, FRP and PSHSQ. It is therefore imperative to formulate a theoretical construct on the mediation effect of UHC on NHIS and PSHSQ by integrating the hypotheses between UHC and PSHSQ. Furthermore, this study is going to structure the mediation relationship between UHC on UA, FRP and PSHSQ by combining the hypotheses relationship between UA and UHC and PSHSHQ as well as the relationship between FRP and UHC and PSHSQ. These linkages are in consonance with Kim (2015), affirmation that two linkages in the model should be supported for mediation to occur through the structural equation model. Based on the preceding research basis, the following hypotheses were advanced:

H_8a: UHC will mediate the relationship between NHIS and PSHSQ

H_8b: UHC will mediate the relationship between UA and PSHSQ

H_8b: UHC will mediate the relationship between FRP and PSHSQ

III.   METHODOLOGY

1. Data Sampling:

The study was conducted in the Republic of Korea and households in Busan area were the target for the study since over 99% of the entire population are insurance subscribers. A sample of 300 respondents were selected from Busan area. In Busan area, households consisted the sampling unit and 300 household heads were targeted for the questionnaire survey. The study combined both quantitative and qualitative methods to gather data on the determinants of the residents' satisfaction with the health insurance system, perceived value of the health insurance system, the extent of universal health coverage by the health insurance system and residents' perception on the quality of health insurance services.

Based on empirical data, the study sought to establish whether there were relationships between variables such as health insurance subscription and universal health access, financial risk protection, universal health coverage, residents' expectation and perceived value of the health insurance systems. The qualitative data included residents' age, educational levels and household characteristics. The study data was collected from both primary and secondary sources.

Based on the demographic background of 300 respondents, there were 49.7% males and 50.3% females. With reference to age, 46.7% of the respondents were between the ages of 20 to 29 years. Respondents within the ages of 30 to 39 years were 22.3% whiles the ages of 40 to 49 years constituted 20.7%. Respondents between the ages of 50 to 59 years, and from 60 years and above constituted 10% and 0.3% respectively. All the respondents were enrolled in the public NHIS due to its mandatory subscription principle.

Formal tertiary sector employees constituted 44.7%. Professionals in secondary industries including engineers, construction workers and technicians constituted 15%, business men and women in the private sector were 12.7%, and housewives constituted 4.3%. Students and respondents in other forms of employment constituted 8% and 15.3% respectively. From the monthly income earnings, 11.7% of the respondents earn less than 1 million won, whiles 45.7% earn from 1 million to 1.99 million won, and 26.3% earn from 2 million to 3.99 million won monthly. Among the respondents, 11.7% and 4.7% earn 4 million to 4.99 million won and 6 million won and above respectively. With regards to household characteristics, 2.3% of households had 1 person whiles households with 2 occupants constituted 4.7%. Households with 3 people constituted 17.3 whiles households with 4 occupants was 56.7% and households with 5 people and above was 19%.

2. Measures:

As per Barroso et al (2010), Structural Equation Modeling (SEM) is a method employed to conduct multiple regressions between variables. LISREL and AMOS are said to be the most utilized SEM software packages. Kaplan (2009), further described SEM as a class of methodologies that seek to represent hypotheses about summarized statistics obtained through empirical measurements and they are based on smaller number of parameters which are defined by hypothesized underlying model. Thus, SEM combines factor analysis and path analysis into a single comprehensive statistical methodology.

Key advantages of SEM are its ability to move from exploratory to confirmatory factor analysis, testing of complex path models and the combination of both measurements at the same time (Klin, 2011; Kalloway, 1998). According to Klin (2011), it employs Covariance Based SEM (CBSEM) structure analysis techniques to measure the relationship between latent and observed variables. It has been explained that latent variables are hypothetical factors which serve as

explanatory variables that are assumed to reflect a continuum that is not directly observed. An observed variable is a direct measure of a construct which is referred to as an indicator. The third category of variables in SEM is residual or error terms which can be attached to either the observed variables or factors specified as outcome or dependent variables and may occur due to random measurement error or score unreliability (Klin, 2011).

It has been argued that though Partial List Squares (PLS) variance based SEM is capable of establishing relationships, CBSEM further evaluates the measurement model by establishing relationship between latent variables and their indicators and the structural model which involves the general model that proposes relationship among the latent variables (Roldan, 2012). Based on these theoretical findings, a CBSEM was constructed to test the relationship between perception on NHIS enrollment, UA, FRP, UHC, and PSHSQ as latent variables and their specific observed measures which have been outlined as follows.

(2.1) NHIS:

As per Dixon et al. (2013), views on National Health Insurance System are reflected in residents' perception and knowledge on the significance of enrolling onto the public health insurance system. This study utilizes the indicators on NHIS which represents the perceptions on subscription to a national health insurance system that provides for the cost associated with healthcare in the study area. Sample items include "I recognize that the healthcare benefit from NHIS is adequate and I am aware and accept the co-payment variation based on healthcare service facility type." Respondents answered these questions based on five-point scales ranging from strongly disagree represented by 1 to strongly agree represented by 5. Cronbach's alpha estimates for these measures were taken.

(2.2) UHC:

Universal Healthcare Coverage through NHIS is the ability of all people to obtain their health needs and at the same time benefit from financial protection. It involves who is covered, what services are covered, and what proportion of cost is covered (Stuckler et al, 2010; WHO, 2013). The findings from the theoretical review were used to create measured variables for UHC based on health insurance. Three dimensions of population, services, and cost cover rates were established to formulate questions such as "There are several hospitals that are accessible in my area when using NHIS," "Adequate NHIS cover for in-patient care," and "NHIS pricing is economical and equitable for all income hierarchies." The responses were ranked on a five-point Likert scale beginning from strongly disagree represented by 1 to strongly agree represented by 5. Higher scores indicated higher levels of UHC.

(2.3) UA:

Universal access through NHIS is the existence of an opportunity for individuals and households to obtain their healthcare needs. It comes in the dimensions of spatial access, financial accessibility and acceptability (WHO, 2010). The WHO (2010), determinants of universal access to healthcare were reviewed to formulate variables for measuring universal access based on the geographical and financial dimensions of access. The items include "Co-payment does not pose a challenge to healthcare access," NHIS package solves all my health needs," and "NHIS healthcare provision resources are well distributed spatially." On a five-point scale, higher scores reflected higher universal access.

(2.4) FRP:

FRP represents Financial Risk Protection by NHIS. FRP is the prevention of individuals and households from encountering catastrophic health expenditure of 40% and impoverishment due to healthcare needs (Kutzin, 2010; Xu et al., 2013). The FRP variables were developed to examine the extent of out-of-pocket payment due to healthcare cost and the economic burden of healthcare cost on the individual and households. The items include "No additional PHI subscription so my finances are not affected," "Absence of healthcare financial setbacks due to high NHIS benefit cover," and "My annual NHIS fee is less than 40% of total household expenditure excluding groceries." Higher scores by the respondents represented higher FRP.

(2.5) PSHSQ:

The WHO defines health services as all services dealing with the diagnosis and treatment of diseases, or the promotion, maintenance and restoration of health. Perceive Satisfaction with Health Service Quality through NHIS comprehensively emphasizes how pleased a subscriber becomes in relation to availability of key health resources, the ways health services are organized and managed and on incentives influencing providers and users. It occurs in the dimensions of actual healthcare conditions and external health provision factors (Fox and Storms, 1981, WHO, 2013). The variables on

satisfaction with health insurance services include "Satisfied with overall NHIS provision system," "Satisfied with the improvement in healthcare service quality due to NHIS," and "Satisfied with proportion of my income spent on NHIS premium." The responses were ranked on a five-point scale starting from strongly dissatisfied represented by 1 and strongly satisfied represented by 5. Higher scores reflected higher levels of satisfaction with the quality of health services.

IV. RESULTS

1. Measured Items and Reliabilities:

The Cronbach's alpha measure was employed to determine the internal consistency of the measured variables used in this research. Based on the theoretical underpinnings of the constructs, the demographic variables were excluded in the reliability testing.

Table 1. Measured Items and Reliabilities

Construct	Item Label	Measured Item	Mean	Std. Deviation	Cronbach's Alpha
NHIS	NHIS1	Recognize that the healthcare benefit from NHIS is adequate	3.11	1.128	.838
	NHIS2	Aware and accept the co-payment variation based on healthcare service facility type	3.32	1.084	
	NHIS3	Recognize the 20% co-burden and is not a challenge to utilization	3.12	1.104	
	NHIS4	Recognize free disability benefits after notification	3.08	1.201	
	NHIS5	Recognize medical checkup schedules by NHIC	3.47	1.102	
	UA1	Co-payment does not pose a challenge to healthcare access	3.43	.977	.861
	UA2	Appropriate cost burden for severe diseases	3.31	1.008	
	UA3	NHIS is a stable means for financing my healthcare needs	3.22	.973	
	UA4	NHIS package solves all my health needs	3.11	.964	
	UA5	NHIS healthcare provision resources are well distributed spatially	3.34	.891	
	FRP1	Annual NHIS fee is less than 40% of total household expenditure excluding groceries	2.95	1.079	.895
	FRP2	Co-burden component does not have huge effect on personal finances	3.08	.969	
	FRP3	Dependents with severe diseases do not create financial burden due to NHIS	3.00	.987	
	FRP4	No additional PHI subscription so my finances are not affected	3.08	.936	
	FRP5	Absence of healthcare financial setbacks due to high NHIS benefit cover	3.09	.964	
	FRP6	Benefits can be increased through premium hike	3.02	1.042	
	FRP7	There is equity in the premiums for individuals and workers	3.16	.976	
	UHC1	Adequate healthcare cost cover for severe diseases	3.26	.880	.900
	UHC2	Adequate NHIS cover for in-patient care	3.18	.903	
	UHC3	The cost cover for medicine is adequate	3.32	.903	
	UHC4	Accurate and timely information dissemination by NHIC to meet health needs	3.16	.925	
	UHC5	NHIS provides appropriate checkup intervals for disease prevention	3.30	.934	
	UHC6	Appropriate healthcare benefit for all population groups	3.28	.848	

	UHC7	NHIS pricing is economical and equitable for all income hierarchies	3.23	.861	
	PSHSQ1	Satisfied with NHIS staff conduct	3.22	.978	.922
	PSHSQ2	Satisfied with overall NHIS provision system	3.21	.940	
	PSHSQ3	Satisfied with the improvement in healthcare service quality due to NHIS	3.00	1.077	
	PSHSQ4	Satisfied with the subscription fee	3.45	.989	
	PSHSQ5	Satisfied with proportion of my income spent on NHIS premium	3.11	.971	
	PSHSQ6	Satisfied with the medical cover	2.94	1.011	
	PSHSQ7	Satisfied that all citizens are satisfied with NHIS healthcare services	3.10	.993	
	PSHSQ8	Satisfied with entire healthcare workers attitude when using NHIS	3.27	.914	
	PSHSQ9	Satisfaction with the effect of NHIS on healthcare management	3.36	.864	

Woertzel (1979), asserts that the study results is highly reliable if the Cronbach's alpha is between 0.70 and 0.98 and also indicated that Cronbach's alpha value of below 0.35 is deemed on unacceptable. The empirical evidence from table 1 illustrate that the residents' perception on NHIS enrollment construct which is anchored on 5 measured variables had Cronbach's alpha value of .838. The respondents attestation on universal access (UA) construct which was premised 5 measured variables had internal consistency indicator of .861 whiles financial risk protection (FRP) which was measured by 7 variables had a Cronbach's alpha value of .895. The Cronbach's alpha value for universal health coverage (UHC) as explained by 7 measured variables is .900. The measures of perceived satisfaction with health service quality (PSHSQ) had Cronbach's alpha value of .922. Thus, it can be deduced from the Cronbach's alpha values of above .700 affirm that there was high internal consistency in the data. Therefore subsequent analysis were conducted to establish both convergent and discriminant validity.

(1.1). Convergent Validity:

The analyses on convergent validity were centered on the factor loadings, average variance extracted (AVE) and composite reliability (CR) of the measured variables for this study. According to Kaynak et al., (2015), for convergent validity to be established through confirmatory factor analysis, factor loadings within each latent construct must be greater or equal to 0.5, AVE must be greater or equal to 0.50 and composite reliability should be greater or equal to 0.70.
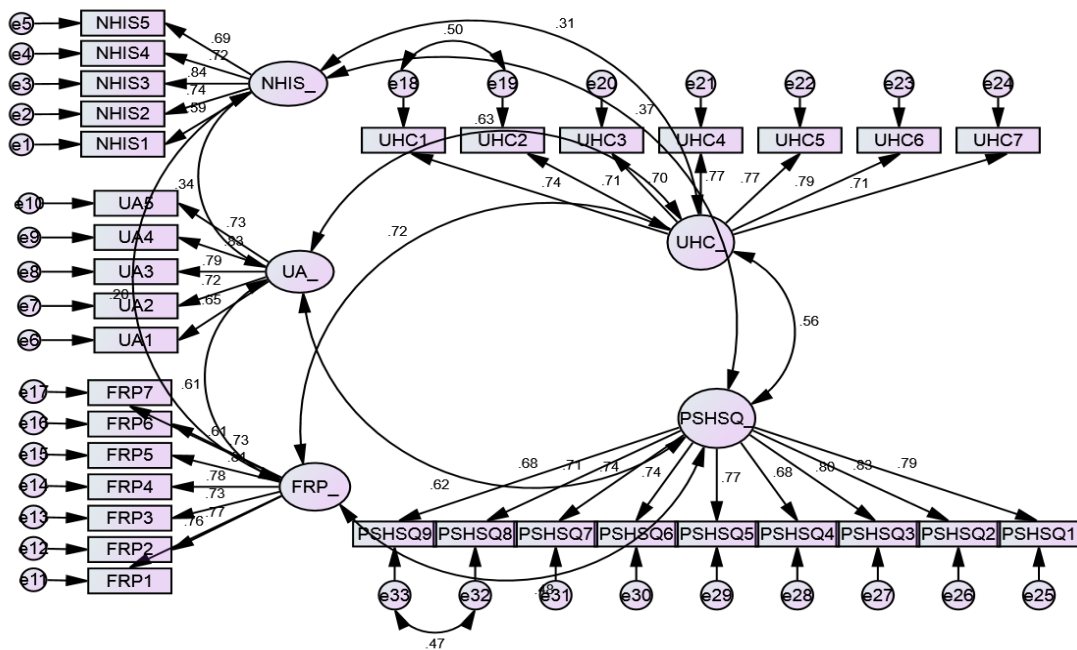

Figure 1. Confirmatory Factor Analysis Model

The results from figure 1, all measured factors had high loadings that exceeded the 0.50 benchmark. Subsequent computations also revealed AVE of greater than 0.50 for each latent construct. All the latent constructs had composite reliability values of greater that 0.70. Thus, convergent validity was established for this study.

(1.2). Discriminant Validity:

Discriminant validity analysis was established through an examination of the inter-correlation of the latent variables and the values of the square roots of the AVE for each of the latent constructs. The computation of AVE, composite reliability (CR), maximum shared variance (MSV) and maximal reliability (MR (H)) were also employed in the establishment of discriminant.

Table 2. Inter-correlation of items and AVE Square roots

Construct	Composite Reliability	Average Variance Extracted	Maximum Shared Variance	Maximal Reliability (H)	1	2	3	4	5
NHIS	0.842	0.520	0.135	0.937	**0.721**				
UA	0.864	0.560	0.399	0.956	0.344**	**0.748**			
FRP	0.897	0.556	0.517	0.969	0.196**	0.611**	**0.745**		
UHC	0.896	0.552	0.517	0.898	0.309**	0.632**	0.719**	**0.743**	
PSHSQ	0.921	0.566	0.386	0.978	0.367**	0.621**	0.481**	0.565**	**0.752**

$* p < .05, ** p < .001$

Square roots of AVE on each scale are bold on the diagonal scales.

The presence of significant correlation among all the latent variables as indicated by inter-correlation values of greater or equal to .20 and the attainment of AVE square root values that are relatively higher than the inter-correlation co-efficient within each respective diagonal scale confirmed discriminant validity for this study.

2. Hypothesized Model Assessment:

Based on the research purpose and theoretical basis of this study, a causal model was constructed with latent and measured variables. A model fit analysis was undertaken to ascertain the adequacy of the model after the validity analysis. The establishment of model fit took into account critical absolute fit indicators such as root mean square error of approximation (RMSEA) and goodness of fit index (GFI), and the incremental fit indicators such as comparative fit index (CFI) and Tucker-Lewis index (TLI).

Figure 2. Standardized Paths of the Hypothesized Model

From the hypothesized model, the incremental fit index (IFI) of .898, CFI of .897 and TLI value of .888 and the RMSEA value of .065 and root mean square residual (RMR) necessitated the application of the modification index (MI) and modification change (par change).

(2.1). Modification of the Hypothesized model:

The first modified models were created by establishing a covariance between e32 <--> e33 which are the error terms that represent satisfied with entire healthcare workers attitude when using NHIS and satisfaction with the effect of NHIS on healthcare management both within the PSHSQ construct. This led to a modification index (MI) of 61.676 and par change of .180 which helped to increase the fit indices for the alternative model. Further suggestions led the creation of a covariance between the error terms e18 <--> e19 on the UHC construct (adequate healthcare cost cover for severe diseases and adequate NHIS cover for in-patient care) which was associated with an MI of 61.891and a par change of .162.

Table 3. Hypothesized Model Modification

Path	Modification Index	PAR Change
e32 <--> e33	61.676	.180
e18 <--> e19	61.891	.162
e16 <--> e17	26.092	.172

In addition, the need for adequate model fit necessitated the creation of a covariance between e16 <--> e17 which represent benefits can be increased through premium hike and there is equity in the premiums for individuals and workers within the FRP construct. This covariance had an associated MI of 26.092 and par change of .172. The application of the MI and par changes on the hypothesized model led to the attainment of an improved alternative model for this study.

(2.2). Alternative Model Assessment :

According to Diamantopoulos and Siguaw (2000), the structural model analysis is conducted to determine whether the theoretically conceptualized relationships between the constructs are supported by the data. The significance of the standardized path of the hypothesized model was demonstrated through the Structural Equation Model. It has been asserted that a significant path should have a p value <0.05 and t value >1.96.
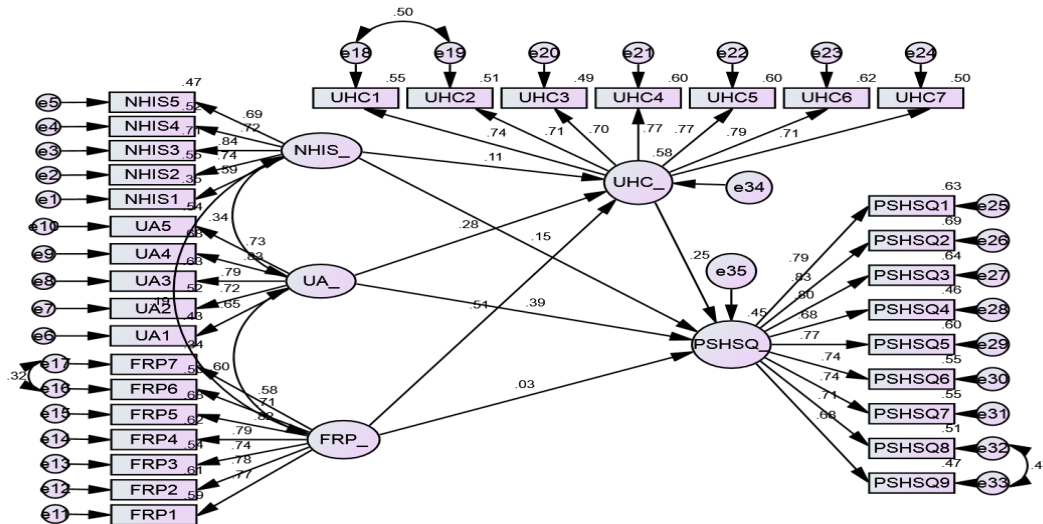
Figure 3. Standardized Paths of the Alternative Model

The alternative model suggest the existence of a positive effect of NHIS and UA on PSHSQ. It is important to note that UHC have positive effect on PSHSQ. Though the paths from FRP to PSHSQ was not significant, UHC accentuated the effects of FRP on PSHSQ.

(2.3). Model Fit Outcomes:

The alternative model was improved to test the hypotheses that were developed based on literature review and it helped to accept the limits of the model fit index. According to Marsh and Hocevar (1985), X^2/df between 1.00 – 5.00 is an indicator of good fit. Hu and Bentler (1999), also assert that RMSEA and RMR values <0.06 and <0.08 are acceptable fit indicators. A benchmark of GFI as established by Joresborg and Sorborm (1988), justifies the acceptance of >0.8 as an indicator of good fit. Bollen (1989), also postulate that an IFI >0.9 is acceptable whiles Bentler and Bonnet (1980), designated a CFI of >0.9 as a good fit model. The TLI indicators as formulated by Tusker and Lewis (1973), asserts that TLI closer to 1.00 supports the idea of a good fit model.

Table 4. Model Fit Indicators

Index	X^2/df	RMSEA	GFI	IFI	RMR	CFI	TLI
Acceptable Benchmarks	1.00-5.00	<0.06	>0.8	>0.9	<0.08	>0.9	0.00-1.00
Hypothesized Model	2.246	.065	.806	.898	.060	.897	.888
Alternative Model	1.921	.056	.836	.925	.058	.924	.917

Based on a comparative examination of the inadequacies in the hypothesized model, an alternative model was adopted due to an improved RMSEA (.056) and RMR (.058). There were also improvements in the GFI (.836), IFI (.925), CFI (.924) and TLI (.917). Therefore, the alternative model was employed in the hypothesis and bootstrapping tests for mediation analysis in the study.

3. Direct Hypothesis Testing:

The direct effects of the independent variables on the dependent variable were tested using linear coefficient analyses based on t-test approach. Landau and Everitt (2004), indicated that the result of a hypotheses test is deemed significant if the critical ratio (CR) is >1.96 and the p value is <0.05. On the contrary, a hypotheses is deemed insignificant if the calculated results produces CR value <1.96 and p value >0.05.

Table 5. Direct Hypotheses Test Outcome

Paths	Unstandardized Estimate	Standardized Estimates	S.E.	C.R.	P Value	Remarks
UHC<---NHIS	.109	.112	.052	2.111	.035	Significant
UHC<---UA	.290	.284	.073	3.972	***	Significant
UHC<---FRP	.405	.513	.057	7.084	***	Significant
PSHSQ<---UA	.480	.395	.100	4.812	***	Significant
PSHSQ<---FRP	.029	.031	.077	.378	.706	Insignificant
PSHSQ<---NHIS	.173	.149	.067	2.582	.010	Significant
PSHSQ<---UHC	.295	.248	.104	2.843	.004	Significant

The empirical results confirmed majority of the research hypotheses and the existence of statistically significant paths were ascertained through the CR >1.96 and p less >0.05 criteria. The hypotheses test conducted on the effect of NHIS on UHC was statistically significant (CR = 2.111 is greater than 1.96 and it also had a p value of .035). The effect of UA on UHC was statistically significant (CR = 3.972, p = 0.001). FRP had a statistically significant effect on UHC (CR = 7.084, p = 0.001). Thus, H1, H2 and H3 were accepted. UA had a significant effect on PSHSQ (CR = 4.812, p = 0.001), however, FRP did not have significant effect on PSHSQ (CR = .378, p = .706). Thus H5 was accepted but H6 was rejected. The significance of the causal effect of NHIS on PSHSQ was confirmed by CR value of 2.582 and p value of .010. Finally, UHC had significant effect on PSHSQ (CR = 2.843, p = .004). Thus, H4 and H7 were accepted based on the empirical data.

4. Mediation effects:

A test for the causal relationship between X and Y through M where X is the independent variable, Y is the dependent variable and M is the mediated can be conducted through hierarchical regression as advocated by Baron and Kenny (1986), Sobel test as indicated by Shrout and Bolger (2002) and bootstrapping as proposed by Preacher and Hayes (2007). The inherent inadequacies in the initial two approaches have facilitated the application of the bootstrapping approach in most recent studies.

The bootstrapping approach was used to test the hypothesized role of UHC as mediator between NHIS, UA, FRP which are the independent variables and PSHSQ which is the dependent variable in this study. Preacher and Hayes (2007), advocated that mediation can occur in the form of full or partial mediation. The analysis was performed with a number of 1000 bootstraps. Table 6 illustrates both direct and indirect effects of the constructs. The bias-corrected (BC) significant values and the BC at 95% confidence intervals (CI) have also been reported. It has been asserted that for mediation to occur, zero (0) should not be in the middle of the BC 95% lower and upper bound values. There should also be an insignificant or a reduction in the direct effect whiles attaining significant indirect effect.

Table 6. Mediation Effects through Bootstrapping Results

Mediation Hypothesis	Direct Effect	P Value	Indirect Effect	P Value (BC)	Standard Error	95% BC CI Lower Bound Value	95% BC CI Upper Bound Value	Results
FRP→UHC→PSHSQ	.031	.667	.127	.002	.061	.039	.287	Full Mediation
UA→-UHC→PSHSQ	.395	.001	.070	.002	.044	.014	.192	Partial Mediation
NHIS→UHC→PSHSQ	.149	.004	.028	.045	.024	.000	.104	Partial Mediation

The mediating hypothesis that sought to explain the causal effect of FRP through UHC on PSHSQ had an insignificant direct effect (.031, p=.667), but there was significant indirect effect (.127, p=.002). The lower and upper bounds of .039 and .287 respectively excluded 0 which led to the confirmation of full mediation for hypotheses H8c. The effect of UA through UHC on PSHSQ had both significant direct effect (.395, p=.001) and a reduced indirect effect (.070, p=.002). The further absence of 0 between the BC 95% CI lower and upper bounds of .014 and .192 respectively led to the confirmed the existent of partial mediation in hypotheses H8b. Finally, there was significant direct and indirect effects in the causal effect of NHIS through UHC on PSHSQ as indicated by .149 with p=.004 and .028 with p=.045 respectively. The absence of 0 in between the BC 95% CI lower bound (.000) and upper bound (.104) led to partial mediation which confirms hypotheses H8a. Thus, it was concluded that UHC accentuate the effects of NHIS, UA and FRP on PSHSQ.

V. DISCUSSIONS

The outcome of the hypotheses test indicated that NHIS had significant positive effect on UHC. The acceptance of H1 can be attributed to the implementation of an obligatory health insurance that permit the respondents' to receive their healthcare needs without major hindrances. The significant effect of UA on UHC reiterates the importance of the availability of real healthcare opportunities on the extent of healthcare coverage in Korea. FRP had significant effect on UHC and this led to the confirmation of H3. The confirmation of H3 can be attributed to the existence of an equitable point-based contribution payment system and provision of benefits in accordance with health needs rather than amount contributed.

The findings indicate that UA has positive effect on PSHSQ and this situation validate the critical role play by access to healthcare regardless of cost and place when it comes to residents' satisfaction with healthcare services. Thus, the confirmation of H5 can be explain by the multiplicity of factors that accounts for the actualization of healthcare seekers expectations especially in advanced countries. The presence of universal access tends to improve health status due to its potential for adequate prevention and treatment of diseases.

However, FRP had insignificant effect on PSHSQ which led to the rejection of H6. The rejection can be attributed to dominance of private health facilities and the concomitant higher levels of competition that propel health service providers to offer enhanced services to meet customer needs which consequently led to relatively high cost of healthcare. Findings from other previous studies indicate that improved customer relations, existence good feedback systems and application of high technology also determine the extent of satisfaction with healthcare services in an advanced countries like Korea where healthcare seekers are considered external customers rather than patients.

Meanwhile, NHIS had significantly effect on PSHSQ which led to the acceptance of H4. The confirmation of H4 can be attributed to the removal of structural bottlenecks in healthcare access and utilization since the introduction of the mandatory NHIS. The health insurance system eliminates adverse selection since it does not take into account pre-existing health conditions. The acceptance H7 affirm the existence of real opportunities to meet healthcare needs in Korea. It also indicate the critical role play by the reduction in healthcare cost burden on households in enhancing equitable access to healthcare.

Finally, it was confirmed that the mediation of UHC serves as fundamental precondition for enhancing PSHSQ which bridges the gap between healthcare seekers pre-utilization expectations and their actual experience gained during healthcare service utilization while using NHIS. This accentuation role of UHC further illustrate that when people are

protected by a health insurance cover of offer over 80% healthcare cost, subscribers' can enjoyed good health conditions since they can seek early prevention and treatment. The existence of unrestricted access through UHC also enhances residents' satisfaction with healthcare services gained through NHIS.

These findings are in consonance with the assertions by Kwon (2010), Jones (2010) and Song (2009), that the existence of universality and FRP makes the Korea NHIS a classic example of global healthcare financing system that uses best practices. The multi-payer insurance system also guarantees FRP for subscribers and their dependents since premiums are usually based on subscriber income level and employer contributions. It can be concluded that, existence of mandatory NHIS coupled with the presence of UA and FRP in the mandatory health have significant effects UHC which consequently impact on residents' potential to benefit from quality health services.

VI. CONCLUSION

1. Summary:

The study findings vividly indicate that NHIS enrolment, presence of UA and FRP serve as social solidarity against the debilitating effects of healthcare cost which directly impact on UHC. The attainment of high population coverage through NHIS and continuous national commitments have resulted in UHC when examined on in the three dimensions of population, healthcare services and cost covered. The existence of UHC has also impacted on PSHSQ which is attributed to the fact that the effects of the harmonized NHIS, UA and FRP on PSHQ are fully and partly mediated by UHC. It demonstrate that further increase in UHC is more likely to have positive effect on the wellbeing of residents. The standards enshrined in the NHIS control adverse selection since it enforce mandatory enrolment regardless of pre-existing conditions and it also employs co-payment component of 20% in most healthcare situations to mitigate moral hazard among subscribers. Factor such as absence of co-payment component burden and unrestricted healthcare access regardless of cost and time have positive effects on accessibility and utilization of healthcare services. The moderate proportions of annual healthcare expenditure which are below 40% of household total expenditure excluding groceries coupled with the presence of an equitable point-based premium payment system and significant reduction in the cost associated with severe diseases as supported by NHIS copayment burden of 5% have resulted in FRP which consequently affect UHC.

It is worth noting that this study examined the empirical relationships between NHIS, UA, and PSHSQ and discovered that NHIS, UA have significant effects on PSHSQ with UHC which also proved to accentuate PSHSQ. The subsequent mediation effects of UHC on residents' satisfaction proved that NHIS and UA alone does not influence the satisfaction with health service quality in an advanced country where the interplay of plethora of factors contribute to varied healthcare needs and consumer preferences. Notwithstanding these observations, it was important to note that NHIS plays vertical and horizontal income redistribution effects as indicated by the inter-correlation between the independent variables and how they directly and indirectly impact on UHC and PSHSQ.

These results are in conformity with findings in existing literature which ascribe NHIS enrollment as one of the predominant determinant of UHC across the world. By and large, this study emphasizes that an investigation into the effects of NHIS, UA and FRP on PSHSQ with UHC as mediator is a critical starting point to bridge the NHIS research gap with empirical review and thus, it extends the narratives on healthcare security and financing systems.

2. Limitation:

Although this study made several contributions to the literature by offering theoretical and practical insights, it suffered some limitations which can be addressed in future studies. First, due to the relatively small sample size, sampling error is likely to be large and this can reduce the statistical power to detect significant relationship. It has limit the generalization potential of the study results. The application of CBSEM sought to limit this challenge.

Secondly, the cross-sectional nature of the study make it difficult to establish causal relations among antecedents and consequents variables with certainty. Though the use of cross-sectional surveys in most empirical studies do not negate the significance of the study findings, longitudinal studies that cut across one or two years is suggested in future research to accurately establish the cause-and-effect relationships.

The reliance on quantitative analysis restricted the use of several qualitative methods including focus group discussions, rapid appraisals and in-depth interviews to elucidate more views from the respondents since structured questionnaires were the dominant form of primary data collection.

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