



Antecedents of Referring Healthcare-provider Engagement and its Impact on Willingness to Re-refer

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Abstract

Emerging nations' healthcare sectors grow with private hospitals. In this environment, private hospitals must balance quality care with business growth, such as patient growth. Referrals and healthcare providers are attracting more patients. Only a few studies described how healthcare provider engagement (HCPE) affects Willingness to re-refer (WRH) patients to a hospital. This study examined healthcare practitioners' HCPE toward WRH and its variables. A quantitative cross-sectional questionnaire study queried 181 healthcare providers who referred patients to RSKK in the last twelve months was conducted from August to September 2022. Partial least squares structural equation modeling (PLS-SEM) was used to evaluate the data. Out of six antecedents, five were significant (p -value <0.05), and HCPE had a significant connection with WRH (p -value <0.05). Finally, patient-specialist interaction is crucial to HCPE. The link between HCPE and WRH is significant. To promote HCPE, hospital administration must prioritize this. This study's HCPE antecedents are linked to WRH, and this model can be repeated in other hospitals.

Introduction

Rising populations in emerging countries are driving healthcare growth. Private hospitals are growing faster than public ones (Tang *et al.*, 2013). It causes competition, like increasing patient numbers. It matters because more patients mean more income (Yi *et al.*, 2019). The growing population requires various healthcare services. Healthcare consumers come from and go to different places (Kosasih *et al.*, 2022). Patients in Indonesia who can afford healthcare can select between public and private facilities. However, to use insurance or national healthcare security insurance (Jaminan Kesehatan Nasional or JKN), customers must follow specific steps of referral system services (Pisani *et al.*, 2017; Wartiningsih *et al.*, 2022).

Healthcare uses referral systems in addition to payment. Referrals are made from lower levels of the healthcare system, such as primary healthcare, private practice, midwifery,

or private clinics, to higher levels, such as hospitals, private or public, to manage or take over a patient's care (Hensher & Price, 2006; Seyed-Nezhad *et al.*, 2021). The referral should be effective for any patient (Seyed-Nezhad *et al.*, 2021; Wau & Razella, 2020). Referral systems benefit several parties, making them crucial. A strong referral network improves patient outcomes. Benefits include efficient healthcare facility resource use. Finally, the referral system indicates the health system's performance and how successfully governments control all subsystems and parties involved in the referral process (Harahap *et al.*, 2019; Seyed-Nezhad *et al.*, 2021). Thus, it must be studied and understood to make the referral system efficient.

Studying the referral system will help explain why patients are referred to higher-level hospitals. It will help doctors make better decisions, treat patients faster, and monitor their

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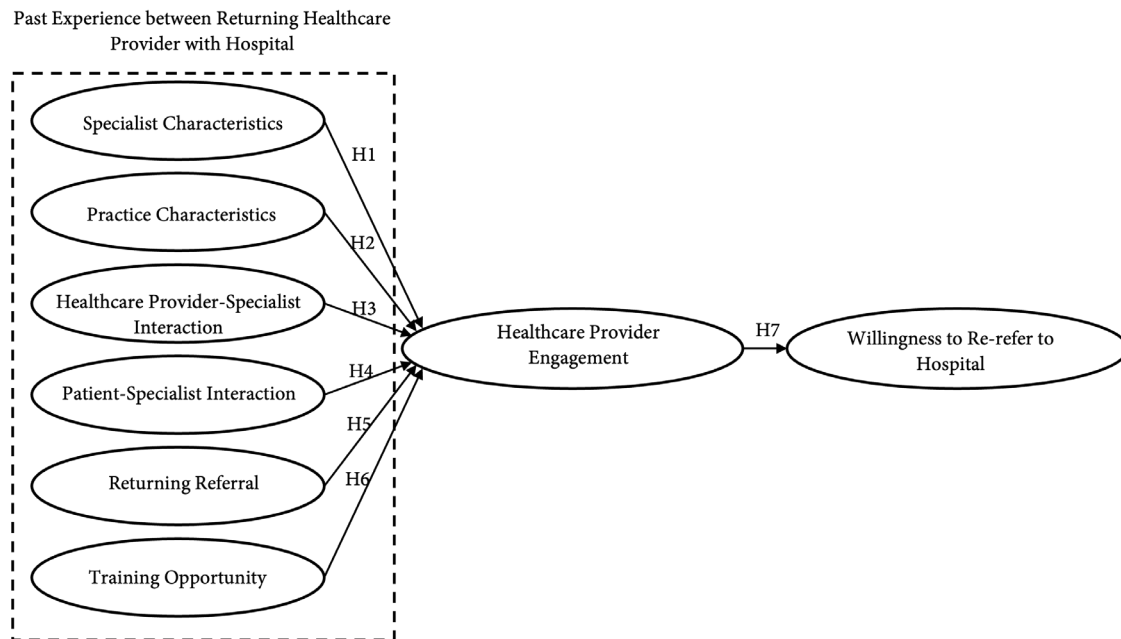


Figure 1. Conceptual Framework

H1: Specialist characteristics (SCH) are positively associated with Healthcare Provider Engagement (HCPE).

H2: Practice characteristics (PCH) are positively associated with HCPE.

H3: Healthcare provider–specialist interaction (HCP) is positively associated with HCPE.

H4: Patient–specialist interaction (PSI) is positively associated with HCPE.

H5: Returning referral (RRL) is positively associated with HCPE.

H6: Training opportunity (TOP) is positively associated with HCPE.

H7: HCPE is positively associated with Willingness to Re-refer to Hospital (WRH)

health, improving patient outcomes (Seyed-Nezhad *et al.*, 2021). Understanding the referral system reduces patient costs and healthcare facility resources. Referral system research can help healthcare practitioners comply with government standards and policies (Hort *et al.*, 2019). Referral system phenomena do occur, especially in private hospitals. Poor referral systems cause diagnosis and treatment delays. This causes patient dissatisfaction and poor care. They will skip primary care and move straight to secondary care (Hort *et al.*, 2019). An integrated referral system involves a complex link between referring healthcare practitioners and referral specialists. Engagement characterized their connection. Two-way social engagement, notably amongst physicians, considers organizational and cultural issues (Kaissi, 2014). Physician engagement is vital to reduce costs while improving effectiveness, patient safety, quality of treatment, physician satisfaction, and retention (Perreira *et al.*, 2018).

Previous research has shown that good communication and engagement are essential for referral system coordination. Successful long-term models of collaborative treatment between referring healthcare practitioners and referral specialists were needed (Forrest *et al.*, 2000). Usually, public hospitals employ referral systems for patients with national healthcare security insurance. In addition to improving patient care, healthcare providers should understand why they recommend patients to a hospital. Whether referring healthcare providers' hospital engagement matters for these reasons is intriguing. There is little research on why healthcare providers recommend individuals to specialists besides their health issues. This study suggests a new research model (Figure 1) based on prior studies on primary care physician specialist choice and factors affecting it (Barnett *et al.*, 2012; Forrest *et al.*, 2000; Kinchen *et al.*, 2004; MohammadAlGhamdi *et al.*, 2015). This study

examines the factors influencing healthcare providers' desire to re-refer patients based on hospital experience. Healthcare providers can also use the important antecedents of engagement to improve their engagement with hospitals that accept patient referrals, which can increase their desire to re-refer to hospitals. Patients will profit from better care, hospitals from higher revenue, and communities from better health systems. The elements of healthcare provider engagement become six independent variables as antecedents: specialist characteristics, practice characteristics, healthcare provider-specialist interaction, patient-specialist interaction, returning referral, and training opportunity.

Materials and Methods

This research uses a quantitative survey method with a cross-sectional study approach to collect the data. This study was conducted in a private hospital, RSKK, in Tangerang district, Banten Province, Indonesia. Data for this study was collected from all healthcare providers (midwives, general practitioners who work at clinics, or general practitioners who work at private practice) who usually refer their patients to RSKK within the last twelve months. After around two months of the survey (August to September 2022), there was a total of 181 responses gathered, which were eligible to be analyzed. The number of samples in this study was determined by power analysis using G-power with f^2 0.15; the sample number required was 153 (Memon *et al.*, 2020; Sarstedt *et al.*, 2022). The sample size aligns with recommendations for partial least squares structural equation modeling (PLS-SEM). The minimum sample required was 160 (Kock & Hadaya, 2018). Therefore, 181 samples in this study are qualified, and the number of respondents met the minimum sample size requirement criteria based on a sample size guideline for analysis with PLS-SEM (Memon *et al.*, 2020).

Data was gathered using a self-administered questionnaire. The constructions of the proposed conceptual framework are assessed using a set of indicators in a structured questionnaire to evaluate six independent variables (SCH, PCH, HCP, PSI, RRL, and

TOP). These independent variables were used to investigate how the antecedent of HCPE (in the table will be stated as HCE) affected WRH as a dependent variable. The questionnaire used in this research was formed from previous studies and adjusted to fit the purpose of the study. The questionnaire used in this study was adopted from Kinchen (Kinchen *et al.*, 2004) and Hollebeek (Hollebeek *et al.*, 2014). All questionnaire questions were translated into the local language to confirm all questions were understandable. Before being distributed, the questionnaire was reviewed by professionals from the marketing field. There are six scales ranging from 1 (strongly disagree) to 6 (strongly agree) to answer each question in the questionnaire, which needed to be chosen by the respondents. The respondents who participated responded to all the interview questions voluntarily and anonymously, as all the responses were confidential. The main objectives of the research were explained to subjects to obtain their informed consent. All data collected from August to September 2022.

This study has eight constructs in the conceptual framework, which is later considered a complex research model. Therefore, the PLS-SEM method is preferable to be used to analyze the complex models in this research because the research model is explanatory (Hair *et al.*, 2019; Henseler *et al.*, 2015). The PLS-SEM analysis used SmartPLS version 3.2.9 (SmartPLS GmbH, Boenningstedt, Germany) to provide a bootstrapping menu to test significance (Memon *et al.*, 2021). Two different models, namely measurement and structural models, are the foundation of the PLS-SEM primary procedure. The measuring model was developed to assess the consistency and validity between the model's components and its indicators. The reliability testing phase includes indicator reliability (outer loading) and build reliability (Cronbach's alpha and composite reliability). Construct validity (average variance extracted [AVE]) and discriminant validity are included in the validity testing process (heterotrait-monotrait [HT-MT] ratio) (Henseler *et al.*, 2015). It can move on to the next stage if these four items are reliable and legitimate. The structural model determines whether there is a meaningful relationship between

each concept in the research model. This work uses importance-performance map analysis (IPMA), a more sophisticated PLS technique, for more precise management implications (Ringle & Sarstedt, 2016).

Results and Discussion

The demographic data are presented in Table 1. Most of the respondents were female, aged 25 to 44 years old, working as midwives, with most of them referred to the hospital less than a month ago and the frequency of referring more than six times. Outer loading from the reflective model was used to measure the reliability indicator. From the result, all 26 research indicators met the outer loading criteria, with all values more than 0.5. All constructs exceed the value of 0.7 for Cronbach's alpha and composite reliability with an upper threshold ranging from 0.7 to 0.95 as an internal consistency test (Hair *et al.*, 2019). Convergent validity was measured using AVE, showing that every construct has $AVE \geq 0.50$ as required (Hair *et al.*, 2019), which means that all constructs could explain variance in the model for at least 50%. Reliability and validity test results are shown in Table 2.

The measurement model analysis's last stage is to evaluate the discriminant validity using the HT-MT ratio. This method was chosen because it has a value that is known to be more precise (Hair *et al.*, 2019; Henseler

et al., 2015). Regarding Hair *et al.* (Hair *et al.*, 2019), which establishes that each construct indicator is conceptually distinct, it is advised that the threshold value for the HT-MT ratio be lower than 0.9. All HT-MT values in Table 2 are significantly below the 0.9 criteria, indicating that all indicators utilized in this study model have sufficient discrimination to measure the various components. This measurement model analysis consecutively passed the reliability and validity test's four criteria. Therefore, it can be said that every indicator in this research model is accurate and dependable for measuring each construct. In this investigation, the model fit indices were determined by standardized root mean square (SRMR), and the value achieved was 0.06, which was lower than the required value of 0.08 and indicated a good model fit (Sarstedt *et al.*, 2022). Firstly, multicollinearity issues were investigated using the inner variance inflation factor (VIF) test. According to the results, which revealed that every construct had an inner VIF score below 5, as suggested (Hair *et al.*, 2019), this model has no multicollinearity problem. From the result, the R^2 of WRH was 0.417, which was categorized as moderate estimation accuracy (Hair *et al.*, 2019). Therefore, the model in this study is capable of estimating the WRH. HCPE has $R^2 = 0.640$, which indicates the strong accuracy. The HCPE had a large effect size on the WRH with the f^2 value 0.716.

Table 1. Respondents Characteristic

Demographic Variables	Category	Sample (n)	Percentage (%)
Gender	Male	24	13.2
	Female	159	86.8
Age	25–44 years old	126	69
	45–65 years old	57	31
Occupation	Midwife	121	66.2
	General Practitioner works at a clinic	24	13.1
Last time referring patient	General Practitioner works at Private practice	38	20.7
	< 1 month ago	81	44.2
	1–6 months ago	79	43
Frequency of referring patients	6–12 months ago	23	12.8
	1–2 times	35	19.1
	3–4 times	35	19.1
	>6 times	113	61.8

Table 2. Reliability and Validity Analysis

Variables	Indicators	Outer Loading	CA	CR	AVE		Discriminant Validity (HT - MT Ratio)						
					HCP	CR	HCE	PSI	PCH	RRL	TOP	HCE	WRH
HCP	HCP1 I feel I have a good experience with my referring specialist	0.695	0.727	0.847	0.650	-	-	-	-	-	-	-	-
	HCP2 I feel my referring specialist returns the patients to me	0.818	-	-	-	-	-	-	-	-	-	-	-
	HCP3 I feel the referring specialist has a good attitude	0.894	-	-	-	-	-	-	-	-	-	-	-
HCE	HCE1 I consider Hospital XYZ based on the relationship that exists between the hospital and healthcare provider if you want to refer patients	0.585	0.872	0.904	0.581	0.804	-	-	-	-	-	-	-
	HCE2 For me, Hospital XYZ has an effective referral system if you want to refer patients to a hospital	0.532	-	-	-	-	-	-	-	-	-	-	-
	HCE3 Generally, I want to get information about the patient I refer to Hospital XYZ	0.803	-	-	-	-	-	-	-	-	-	-	-
	HCE4 For long-term interest, I feel sure when referring patients to Hospital XYZ	0.779	-	-	-	-	-	-	-	-	-	-	-
	HCE5 I feel calm (not worried) when referring patients to Hospital XYZ	0.856	-	-	-	-	-	-	-	-	-	-	-
	HCE6 I usually feel comfortable when referring patients to Hospital XYZ	0.862	-	-	-	-	-	-	-	-	-	-	-
	HCE7 I can feel confident when referring patients to Hospital XYZ	0.846	-	-	-	-	-	-	-	-	-	-	-
PSI	PSI1 Usually, my patient says that she/he is treated well by a specialist	0.872	0.892	0.926	0.757	0.672	0.767	-	-	-	-	-	-
	PSI2 Generally, patients already have desired specialists who practice in the hospital	0.907	-	-	-	-	-	-	-	-	-	-	-
	PSI3 Generally, hospital XYZ can be reached by patients easily	0.867	-	-	-	-	-	-	-	-	-	-	-
	PSI4 Usually, the referral specialist gives enough time to examine the referred patient	0.831	-	-	-	-	-	-	-	-	-	-	-
PCH	PCH1 I feel the referral specialist has appointment timeliness	0.865	0.831	0.899	0.749	0.774	0.744	0.620	-	-	-	-	-
	PCH2 I feel the referred patients can be protected by insurance	0.923	-	-	-	-	-	-	-	-	-	-	-
	PCH3 The hospital I referred patients to, can upgrade the class of JKN	0.804	-	-	-	-	-	-	-	-	-	-	-
RRL	RRL1 For me, the specialist needs to refer back my patients	0.733	0.800	0.884	0.719	0.770	0.732	0.543	0.726	-	-	-	-
	RRL2 It is important for me that the specialist who refers my patient back inform me of the progress of my patient's therapy	0.908	-	-	-	-	-	-	-	-	-	-	-
	RRL3 For me, the specialist needs to provide information about why my patient is not referred back	0.891	-	-	-	-	-	-	-	-	-	-	-
SCH	SCH1 I feel the referral specialist has sufficient medical skills	0.599	0.710	0.845	0.652	0.590	0.594	0.572	0.492	0.587	-	-	-

Variables	Indicators	Outer Loading	CA	CR	AVE		Discriminant Validity (HT - MT Ratio)							
					HCP	CR	HCE	PSI	PCH	RRL	TOP	HCE	WRH	
SCH2	I feel the referral specialist has a board certification	0.891	-	-	-	-	-	-	-	-	-	-	-	-
SCH3	I feel the referral specialist has a good reputation	0.896	-	-	-	-	-	-	-	-	-	-	-	-
TOP1	For me, it is important to have the opportunity to receive training from Hospital XYZ	0.895	0.899	0.937	0.831	0.703	0.757	0.756	0.719	0.651	0.651	0.565	0.565	0.565
TOP2	For me, it is useful to have the opportunity to attend scientific events organized by the Hospital XYZ	0.926	-	-	-	-	-	-	-	-	-	-	-	-
TOP3	For me, it is a good opportunity to get an invitation to scientific events from Hospital XYZ that matches my profession	0.914	-	-	-	-	-	-	-	-	-	-	-	-
WRH1	I want to refer patients to Hospital XYZ if I get a new case that needs to be referred	0.902	0.844	0.906	0.763	0.581	0.759	0.577	0.677	0.627	0.627	0.254	0.641	-
WRH2	I consider Hospital XYZ more than other hospitals if I want to refer patients to a specialist	0.881	-	-	-	-	-	-	-	-	-	-	-	-
WRH3	I recommend Hospital XYZ to my colleagues if they need a referral hospital	0.836	-	-	-	-	-	-	-	-	-	-	-	-

HCP, Healthcare Provider - Specialist Interaction; HCE, Healthcare Provider Engagement; PSI, Patient - Specialist Interaction; PCH, Practice Characteristics; RRL, Returning Referral; SCH, Specialist Characteristics; TOP, Training Opportunity; WRH, Willingness to Re-refer to hospital, CA, Cronbach's alpha; CR, composite reliability; AVE, average variance extracted; HT-MT, heterotrait-monotrait

The Q2 predictive value is calculated using a blindfolding procedure to assess the PLS path model's predictive relevancy (Hair *et al.*, 2019). In contrast, the WRH displayed Q^2 predict= 0.365 and was classified as having a medium predictive value. HCPE has a Q^2 prediction of 0.608. Thus, it can be concluded that HCPE has a large predictive relevance to the PLS-path model. To ascertain the relationships between the model's variables and evaluate whether the study's proposed hypothesis was validated, bootstrapping was used to test hypotheses. The bootstrap method was used to determine the significance of the data analysis in PLS-SEM Memon *et al.*, 2020). To ascertain whether a directional hypothesis is significant, the cut-off value of p value>0.05, agreement with confidence intervals (CI) 5%, and CI 95% direction were utilized (Hair *et al.*, 2019; Sarstedt *et al.*, 2022).

Table 3 demonstrates that six hypotheses with positive direction are supported ($p < 0.05$) with CI between a low threshold of 5% to a high threshold of 95%. Only one hypothesis, H1, was not supported ($p > 0.05$) from Specialist Characteristics to HCPE. PSI has the strongest effect on HCPE, followed by RR and HCP. Finally, HCPE demonstrated/ revealed a strong relation to WRPH with a standardized coefficient of 0.646, categorized as a large effect size ($f^2 = 0.716$). In addition, mediation analysis

was performed following Nitzl *et al.* (Nitzl *et al.*, 2016) advice to ascertain the mediation's importance through the particular indirect effects. Based on the findings of the mediation analysis, the HCPE as the mediator construct investigated had T-statistics above the 1.645 threshold for the supported hypothesis. Therefore, it can be concluded that HCPE proved to be a significant mediator towards WRH. From the importance-performance map, it is essential to pay more attention to indicator PSI4, which discusses the adequacy of time to examine patients with the specialist. PSI4 is an indicator that is considered vital but not performed well. Therefore, this situation needs to be prioritized by the hospital management because it is deemed necessary by the healthcare providers but has not shown enough performance. From the analysis using PLS-SEM, the result of an empirical model can be seen in Figure 3. HCPE and WRH have a moderate relationship. Therefore, this research model can be used to study HCPE and WRH.

This study focuses on enhancing the quality of patient care and the referral system from the perspective of healthcare providers and hospitals, particularly in developing nations where the standard of healthcare must continually be raised. The findings of this study tend to be to the results from earlier studies (Forrest *et al.*, 2000; Kipkirui Aruasa

Table 3. Hypothesis Test Result

	Hypothesis	Standardized coefficient	p-value	CI 5.0%	CI 95.0%	Result
H1	Specialist Characteristic -> Healthcare Provider Engagement	0.052	0.117	-0.021	0.125	Hypothesis not supported
H2	Practice Characteristic -> Healthcare Provider Engagement	0.136	0.012	0.043	0.239	Hypothesis supported
H3	Healthcare Provider - Specialist Interaction -> Healthcare Provider Engagement	0.174	0.000	0.091	0.263	Hypothesis supported
H4	Patient - Specialist Interaction -> Healthcare Provider Engagement	0.287	0.000	0.173	0.387	Hypothesis supported
H5	Returning referral -> Healthcare Provider Engagement	0.176	0.001	0.081	0.272	Hypothesis supported
H6	Training Opportunity -> Healthcare Provider Engagement	0.173	0.002	0.080	0.279	Hypothesis supported
H7	Healthcare Provider Engagement -> Willingness to Re-refer Patients to Hospital	0.646	0.000	0.582	0.716	Hypothesis supported

CI, Confidence Interval

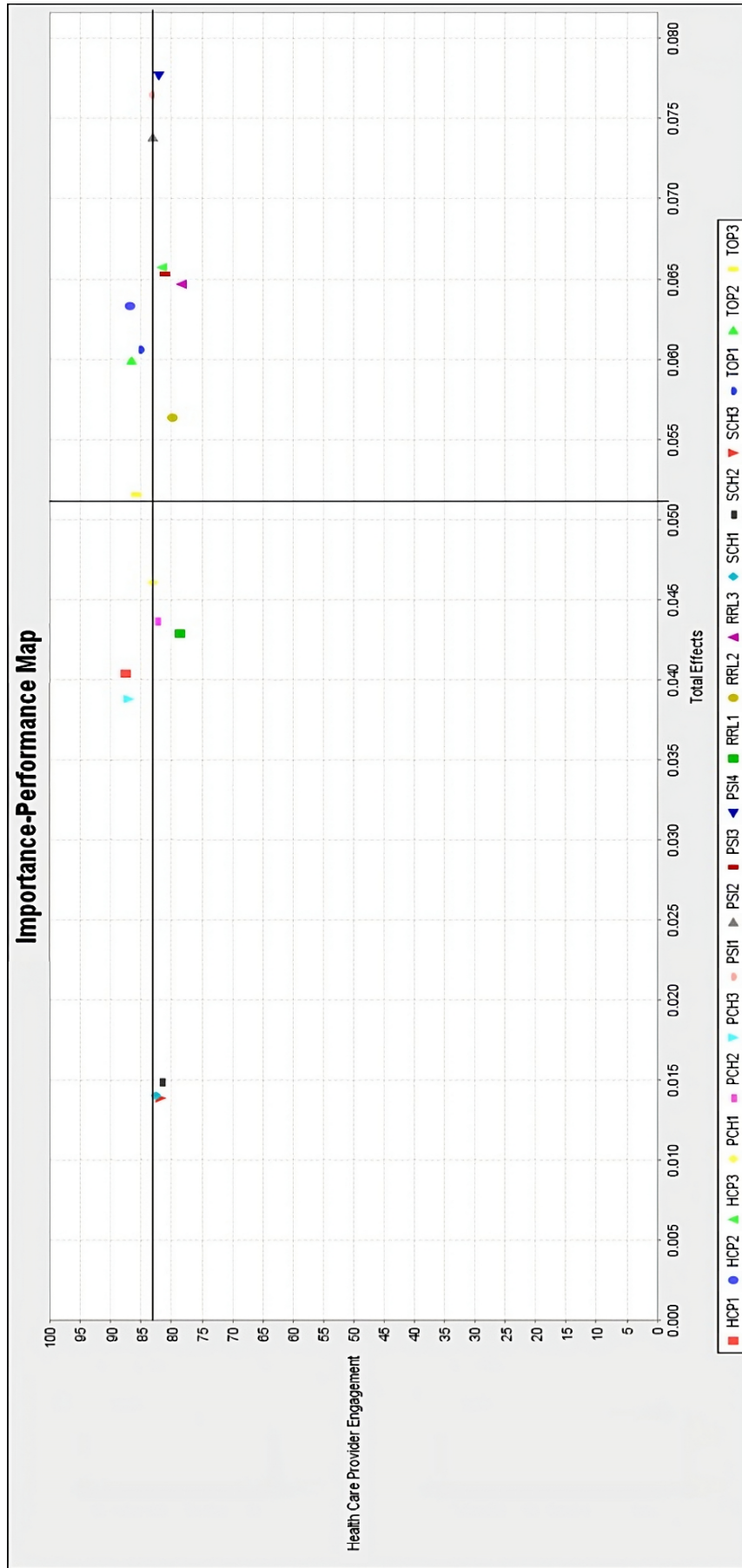


Figure 2. Importance-Performance Map
 HCP, Healthcare Provider - Specialist Interaction; PCH, Practice Characteristics; PSI, Patient - Specialist Interaction; RRL, Returning Referral; SCH, Specialist Characteristics; TOP, Training Opportunity

et al., 2019) and demonstrate that healthcare providers' engagement significantly impacts their Willingness to re-refer their patients to the hospital. This study supports prior research (Kinchen *et al.*, 2004), showing that healthcare practitioners' experience is a crucial indicator of patient referral involvement. Five of the six PHCE antecedents in this investigation are significantly linked (Figure 3). The last antecedent, specialist characteristics, had no significant association with PHCE, supporting Kinchen's 2004 study. Even though medical skill, board certification, and reputation are important, the healthcare providers who refer may think all the specialists they refer their patients to have those essential characteristics already, so they stop considering them. Specialist characteristics are significant for referral specialists, even if referring healthcare providers don't think so.

Patient-specialist interaction was the most significant HCPE association (0.287). This suggested that HCPE increased with patient-specialist engagement. Previous research by Barnett (Barnett *et al.*, 2012). supports this patient-specialist interaction connection with HCPE. Healthcare providers referring patients to specialists cited good specialist experience. This finding supports the specialist

characteristics explanation above. When specialists' traits are met, a patient-specialist relationship is most crucial. Thus, hospital specialists must increase patient interactions and provide suitable treatment experiences. Second, returning referral antecedent is strongly associated with HCPE. The returning referral antecedent includes providing patient status updates, returning patients to their referring healthcare professionals, or explaining why not. Previous research (Forrest *et al.*, 2000) found that referring physicians were satisfied with referral results. Many referral physicians do not give back information because they feel overwhelmed or useless, and some do not send back patients (MohammadAlGhamdi *et al.*, 2015). The referral experts should give comments to the referring healthcare practitioners by phone or letter (Forrest *et al.*, 2000).

This study's significant link between returning referrals and HCPE shows that primary care providers and private hospitals must collaborate to create a sound referral system. This collaboration can improve patient care and communication, improving patient and hospital outcomes. Figure 3 shows that HCPE became a WRH predictor. If the parameters are modified, the model still predicts according

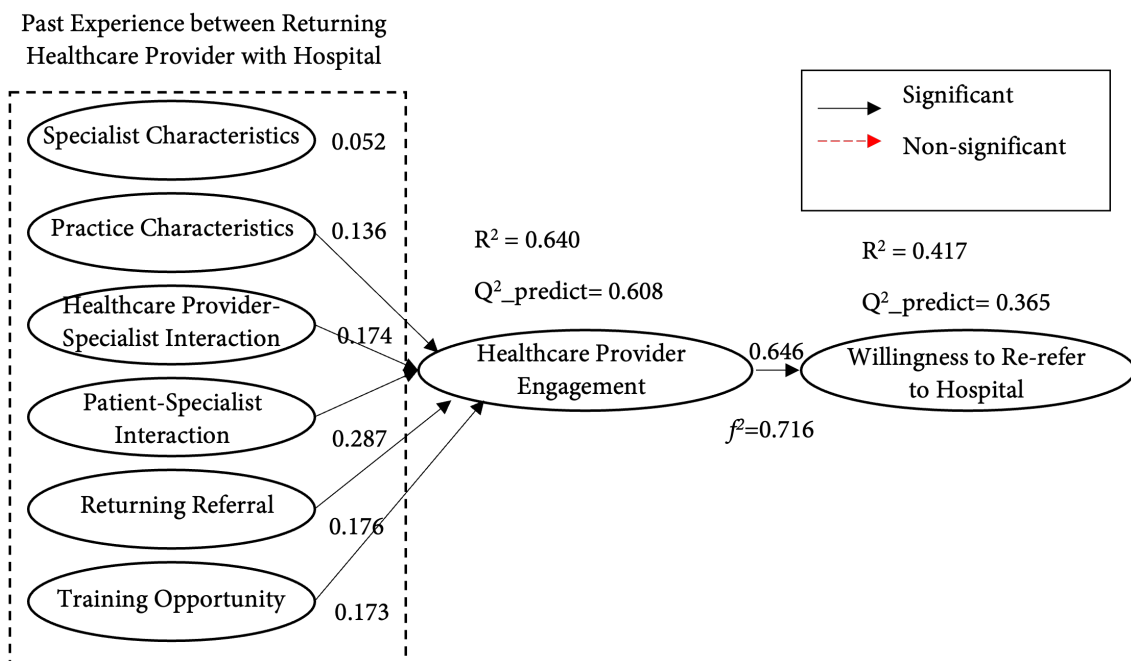


Figure 3. Empirical Model

to Q2, and WRH's R2 suggests moderate explanatory power. This study found a new way to increase the Willingness to re-refer patients to the hospital by boosting healthcare professional engagement, as shown in Figure 3. In conclusion, private hospitals need a sound referral system with healthcare providers to improve healthcare delivery, cost-effectiveness, collaboration, and policy alignment.

This study has limitations that should be considered in future research. This study includes healthcare practitioners who refer to one private hospital. Future research may benefit from selecting participants from multiple hospitals for more reliable results and a more representative sample with objective criteria. This study included doctors and midwives. Most doctors treat any medical condition, while midwives treat obstetrics and gynecology. Thus, these healthcare professionals will encounter specialists differently. Separating participants by occupation is best for the recommendation.

Conclusion

This study concluded that healthcare provider engagement positively relates to Willingness to re-refer to the hospital, while experience between returning healthcare providers with the hospital proven as an antecedent of HCPE. Patient-specialist interaction has a predominant relation with HCPE. The model shows how healthcare providers engage with hospitals will depend on their experience and perception after referring patients to the hospital. Healthcare providers willing to re-refer their patients to the hospital are the ones who engage with it. So, to increase the Willingness to re-refer patients to the hospital, hospital management needs to build engagement with healthcare providers who refer their patients to the hospital, especially regarding patient and specialist interaction.

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