An innovative medical consultation model in mainland China
Acceptance and perceptions

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Abstract

Purpose – The purposes of this paper are two-fold: first, to introduce a new concept of primary care consultation system at a mainland Chinese hospital in response to healthcare reform; and second, to explore the factors associated with change resistance and acceptance from both patients' and medical staff's perspectives.

Design/methodology/approach – A survey design study, with two questionnaires developed and distributed to patients and medical staff. Convenience and stratified random sampling methods were applied to patient and medical staff samples.

Findings – A 5-dimension, 21-item patient questionnaire and a 4-dimension, 16-item staff questionnaire were identified and confirmed, with 1020 patients (91.07 percent) and 202 staff (90.18 percent) as effective survey participants. The results revealed that patient resistance mainly stems from a lack of personal experiences with visiting general practice (GP) and being educated or having lived overseas; while staff resistance came from occupation, education, GP training certificate, and knowledge and experience with specialists. Living in overseas and knowledge of GP concepts, gender and education are associated with resistance of accepting the new practice model for both patients and staff.

Originality/value – There are few Chinese studies on process reengineering in the medical sector; this is the first study to adopt this medical consultation model and change in patients' consultation culture in Mainland China. Applying organizational change and process reengineering theories to medical and healthcare services not only extends and expands hospital management theory but also allows investigation of modern hospital management practice. The experience from this study can serve as a reference to promote this new consultation model in Chinese healthcare reform.

Keywords Organizational change, General practice, Empirical study, Primary care, Medical consultation

Paper type Case study

Introduction

Organizational change is a constant in today's healthcare management, which involves a range of activities that are conducted to enhance a company's efficiency and effectiveness, allowing it to change from its current situation to a future ideal. These activities mainly include reform, process reengineering and innovation (Hill and Jones, 1998). Organizational change is conducted to improve the overall performance of an organization and is based on process reengineering. Business Process Reengineering (BPR) is a specific organizational change model that includes redesign and a series of relevant reforms (Hammer and Champy, 2004). The "three-step-evolution" organizational change theory (Lewin, 1947) proposes unfreezing, changing and refreezing as the three main processes in organizational change. Given advances in relevant theories, BPR is appropriate not only for enterprises but also for hospital systems. For example, in the USA, process reengineering was applied by Eitel DR in their Emergency Department to divert patient crowds during peak hours; they succeeded in reducing the waiting time while maximizing patient satisfaction (Eitel et al., 2010).

Although healthcare is a business industry, some of healthcare's special characteristics, such as trying to serve the entire population, BPR in healthcare might differ from that in other service industries. For example, as healthcare is closely connected to the population's health and life quality, its main concern is service quality and cost effectiveness, even though it recognizes that profit is also necessary in order to exist. Conflicts may arise in organization management between these two goals. Moreover, healthcare organizations are typical organizations and include "professional bureaucracies" (Mintzberg, 1983). Hierarchical structures in healthcare, bounded by various hierarchical levels and different professions, might make agreement and cooperation difficult and change harder to implement (Rehder, 2012; Ham et al., 2003). People's perceptions and acceptances of a new organization change vary and usually there is reluctance at the beginning. Adoption of a new concept in healthcare organizations requires a long period of time, especially when the change goes against a deeply embedded traditional practice.

Need for reform

There are very few studies in China focusing on BPR as applied to the medical sector. Thus, many issues remain to be further studied and modified. The development of primary care and general practice (GP) in Mainland China are lagging. The Chinese Government began to work on this area in the early 2000s (Hou, 2009). Major efforts have been directed to GP training and system development, yet it is still hard to build public trust and switch the culture from favoring specialist services to selecting and starting with GP (Li, 2016).

Traditional health seeking processes in Mainland Chinese hospitals allows patients to choose which hospital to visit, and which medical department to register within. For example, a patient with chronic chest pain may register for the cardiology department and to see a cardiologist at his/her initial hospital visit. Historic practice is that most patients seek medical care by walking in to self-selected hospital without an appointment, because patient appointment systems are a new concept, and only recently being adopted by a very few hospitals in China. Consequently, it produced a large volume of patients at the waiting room at the same time, not only results in unpredicted length of waiting time for patients, but also increased unpredicted volume of services for providers. Furthermore, because patients are visiting hospitals or select doctors at random, medical records created at Hospital-A may not be used at Hospital B, thus it is lacking in continuity and coordinated care since no patient information shared cross continuum of the treatments among hospitals. In addition, almost no patients in the public hospitals have a primary care physician to whom the patient can return for follow-up consistently over time. This traditional medical practice approach created isolated and episodic medical care, inconvenient to patients, involving large quantities of time and specialist resources. It also lacks the quality and continuity of care desired. From a hospital management and provider standpoint, perhaps the largest component of this system

is the waste that occurs when the patient has selected the wrong department and specialist relevant to the patients medically determined diagnosis requiring a further referral to GP or another specialty department.

Conceptual framework and implementation of the new consultation model

GP is not new to healthcare systems in many developed countries, such as Scandinavian counties, Germany, Greece, Italy, the UK and the USA (van de Ven, 1996; Marshall, 1999). GP is said to focus more on health, psychological condition and humanity, instead of merely on disease, biology and technological aspects of health (Li, 2016). The new consultation model presented in this study, "Primary Care by General Practitioners and Secondary Care by Specialists," aims to introduce GP services into the Chinese healthcare system. Similar to other GP models, it mandates GP service for the initial diagnosis, and the general practitioner has sole responsibility for deciding to transfer the patient for specialist service in the hospital.

The University of Hong Kong-Shenzhen Hospital (HKU-SZH), with a full capacity of 2,000 beds, 8,000–10,000 outpatient visits daily, officially established its operation in July 2012 in Shenzhen, China. The hospital is a public hospital which Shenzhen municipal government constructed and provided funding for the facility. It is intended to develop international medical standards and lead medical reform in mainland China. Medical consultation process reengineering is one of the reforms that the hospital initiated since the opening of the facility. The reengineering aims to shift from a disease-centered biomedical model dominated by specialist medical services to a bio-psycho-social medical model dominated by GP (or in Western terms, primary care,) medical services. To gain admission to the hospital and outpatient clinics, an appointment is required. Walk-ins must begin with GP and keep subsequent care by appointments. The implementation of the new consultation model in HKU-SZH could be seen as a first step in China's healthcare system reform, as it was the first time in Mainland China that this medical consultation model and culture aspect was implemented in a hospital.

Another characteristic of this process is the need to pay a flat fee (or bundled payment) at time of admission for the GP services which is inclusive of payment for many ancillary services. Because the *quid pro quo* for these fees is not familiar or customary in most Chinese hospitals, it meets with resistance and requires much education and explanation.

The three main types of BPR are radical top-down BPR, participative BPR and BPR driven by enterprise resource planning (ERP) systems (Huq and Martin, 2006). It is said that radical top-down BPR negatively affects staff morale and is more likely to fail (Huq and Martin, 2006). To avoid drastic changes and ensure stability, HKU-SZH chose participative BPR (Huq and Martin, 2006) as a step-by-step organizational change that engages most stakeholders in the organization. Since at the time of the implementation of BPR, HKU-SZH was still a new hospital with fewer than three years in operation, its electronic information system was not yet well developed. Thus, HKU-SZH did not conduct ERP-driven BPR. The implementation of BPR requires the support of senior leaders as well as effort from all levels and all professions (Huq and Martin, 2006). Therefore, the process improvement team in charge of the change process should involve members from multiple levels and with varied professional backgrounds. The process improvement team at HKU-SZH included leaders (directors and vice directors in charge of medical affairs), project teams (heads of medical, nursing, public relations and other participating departments) and the head, professors and associate professors of the GP department. The implementation of the Reengineered Consultation Process followed Lewin's (1947) "three-step-evolution" organizational change process of The Unfreezing Stage, The Changing Stage and The Refreezing Stage.

Step I. The unfreezing stage

This stage involved preparation for the consultation process. Several major activities included: establishing a GP department in the hospital as a "gate-keeper." After hospital

leaders and department heads reached consensus, the GP consultation model was introduced from Hong Kong to HKU-SZH. For the initial diagnosis, it became mandatory for patients to visit the GP department; if deemed necessary, the GP would arrange transfer to a specialist service; communicating the plan to all hospital departments. After the communication initiated by the hospital was transmitted with the Shenzhen government and the health authorities, the process transformation plan obtained support from all departments; and using public media to publicize the reform. This drastic change generated resistance and misperception by local residents (patients) and hospital employees. HKU-SZH tried to reduce resistance to the reform by promoting the model in all types of media, including television, newspapers and community posters.

Step II. The changing stage
This stage involved implementation of the proposed plan. Several steps are included in this stage: The director, professors and associate professors of the Department of Family Medicine and Primary Care of the Faculty of Medicine of the University of Hong Kong provided training sessions on GP to hospital employees and managers to help shift their attitudes and behaviors to accept the new consultation model; through mock demonstrations of the new consultation process, deficiencies in the process were summarized and corrected; training sessions on teamwork were provided to create a tolerant climate, enhance employees' sense of security, reduce their psychological resistance to the reform and improve their confidence in it; and as an immediate task, general practitioners, nurses and other staff in the GP department were trained in their specialty related to the new consultation model at the GP training base in Hong Kong. The director, professors and associate professors of the Department of Family Medicine and Primary Care of the Faculty of Medicine from the University of Hong Kong conducted training.

Step III. The refreezing stage
This stage involves assessment of current status and issues related to the change model. After the consultation model was adopted for one and a half years, it was assessed to identify support and resistance to the reform and to propose suggestions and measures for further transformation. With the necessary reinforcement measures, the new process and related behaviors were resolved. The organization reform entered a stable stage and, hopefully, the new model is a part of the hospital culture.

Current issues
This study is focused on illustrating Step III, The Refreezing Stage – the assessment step of the BPR process. After the new medical consultation model had been implemented for a year and a half, an evaluation of the reengineering process revealed signs of resistance to the organizational change. The number of outpatient visits to GPs showed no remarkable increase, while the number of outpatient visits to specialists and total outpatient visits trended toward an increase (Figure 1). Therefore, the increase in the total number of outpatients mostly reflected an increase in the number of outpatient visits to specialists. This shows that the implementation of the new model did not attract more people to HKU-SZH GP service for an initial diagnosis. Instead, many chose to consult specialists for their initial diagnosis at other hospitals and then came to HKU-SZH for specialist services.

Resistance to organizational change manifests as a total or partial failure of the attempt to change the organization's "technology, production, methods, management practices, or compensation systems" (Oreg, 2006). Szabla (2007) indicates that resistance is a combination of "cognitive, emotional and intentional reactions."
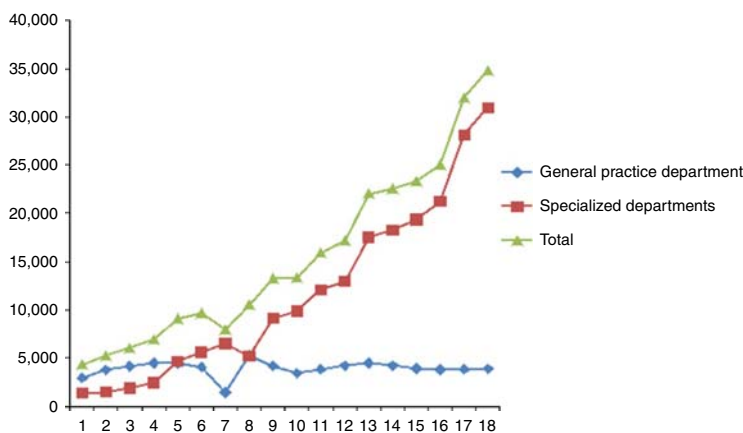
Source: Medical Record Statistics HKU-SZH

The purpose of this case study was two-fold. First, as discussed above, to introduce a new concept of patient consultation system at a mainland Chinese hospital. Second, to examine the factors associated with resistance and acceptance of the newly established consultation model from both patients' and medical staff's perspectives.

The first significance of this study is that by assessing the current status of the BPR, top management at the hospital can know what areas need more attention. In addition, as a large public hospital, HKU-SZH can serve as a reference and help popularize the new consultation culture in China through this empirical case study. We hope that this study will promote further improvement of hospital services and that based on this experience, process reengineering can be expanded to similar medical service processes. Meanwhile, we also hope to perform further studies with relevant colleagues in this field as well as to conduct longitudinal studies to assess the implementation of our suggestions and their success.

Methodology

Participants selection and procedures

Patients and medical staff were recruited from HKU-SZH to complete two separate self-designed questionnaires. Patient eligibility included: being 16 years of age or older; making outpatient visits for GP or specialty care (excludes emergencies); and being in stable health condition and willing to participate in the survey. Medical staff eligibility was determined by: doctors, nurses, medical technicians and other clinical staff (excludes administrative staff); and employed by the hospital for at least six months (Table I).

Participants	Category	Criteria
Patients	Age	⩾16
	Consultation type	Outpatients searching for general and special medical consultation (excludes emergencies)
	Health condition	In stable condition and willing to participate in this survey
Medical staff	Occupation	Doctors, nurses, medical technicians and other clinical staff (excludes administrative staff)
	Employment length	At least six months

For the purpose of determining effective measurement items, a pilot survey was conducted. The sample size for the pilot survey was 120 patients and 55 medical staff. During the pilot surveys, feedback on the questionnaires was collected from participants as well as from experts in statistics, GP and management backgrounds in order to direct revision. The sample size for the final surveys included 1,200 patients and 240 medical staff.

The patient survey was distributed at outpatient departments during working hours, from Monday to Friday, for two weeks. Specially trained volunteers were assigned to assist patients with reading or comprehension issues. A convenience sampling method was applied to the patient sample selection. The pharmacy and ultrasound areas were the primary locations for patient sampling locations, since most of patients in these areas had often just completed consultation with different clinical departments and were willing to take the survey. In addition, to balance the sample size across departments, patients at waiting room areas from different outpatient services were also recruited.

The medical staff survey was distributed to the selected medical departments. The stratified random sampling method was conducted on the staff sample. The sample size within each occupation was arranged according to its proportion of staff within HKU-SZH. In particular, staff were primarily from Mainland China and Hong Kong, so the sampling considered the balance between these two areas to reduce perspective bias caused by culture differences. Both final surveys were conducted from April to May, 2014.

Survey development and measures

Two questionnaires were designed, one for patients and another for medical staff, to assess their knowledge and acceptance of the new consultation model. The perception of respondents was measured from 1 (strongly disagree) to 7 (strongly agree) on Likert scales (Likert, 1952). The questionnaires included demographic variables and items related to: knowledge of bundled-payments for visiting a GP, and for visiting a specialist; the concept of GP (or primary care) consultation model; appointment system and patient portal; patient satisfaction for service (for patient only); skill set for GP (for medical staff only).

Because the concept of GP (or primary care) came from western countries, we hypothesized that there was an association between people who have been educated or lived in foreign countries, who may have been exposed to or understand better the GP concept. We added variables of overseas experience or education into the questionnaires.

Statistical methods

The reliability of the questionnaire was assessed using Cronbach's α coefficient. A coefficient > 0.8 shows very good reliability (Cronbach, 1951). In terms of validity, an exploratory factor analysis with principle component analysis and varimax rotation was conducted. Only factors with common regression coefficients with an eigenvalue $\geqslant 1$ were chosen as primary factors. Factors were obtained by varimax rotation. The number of factors was determined by a scree plot and a factor loading matrix. Factors with a loading < 0.4 were not considered.

In the process of analyzing results, the first component ratio was adopted to describe the general information for patients and medical staff, such as age, gender, degree and title. Second, one-way ANOVA, Kruskal–Wallis (to test homogeneity of variances), nonparametric and Bonferroni tests were used to analyze the relationship between the general information for the samples and factors in questionnaires. The general attitude for each factor was classified as "agree," "neutral" and "disagree," and these were determined by the total scoring of items within each factor.

To speculate as to the factors underlying resistance to the new consultation model, this study compares the means to identify individual characteristics that present lower acceptance scores in the consultation model factors.

Results

Results for the questionnaires' design and validation

The final analyses were based on 1,020 effective patient questionnaires (91.07 percent) and 202 effective staff questionnaires (90.18 percent). The KMO values (0.900 and 0.830, respectively) and Barlett's test results (13,807.1 with probability 0.000 and 1,922.569 with probability 0.000 respectively) showed that the items in the two questionnaires had a significant level of correlation and were good for factor analysis. Through Scree Plot, a final version of the patient questionnaire (21 items) with five factors and of the medical staff questionnaire (16 items) with four factors were confirmed (Table II). Both questionnaires show good homogeneity reliability with total Cronbach's α coefficients of 0.914 and 0.742, respectively (Tables III and IV).

Questionnaire	Factor name	Factor description	Number of questions
Patient's	P-Factor1	General practice package consultation and treatment fee	5 questions
	P-Factor2	Knowledge on general practice and primary care Model	6 questions
	P-Factor3	Making appointment system and patient portal to receive clinical reports	3 questions
	P-Factor4	Clinical service attitude	4 questions
	P-Factor5	Consultation and treatment fee for specialist team	3 questions
Medical Staff's	M-Factor1	Consultation and treatment fee for specialist team	3 questions
	M-Factor2	Package consultation and treatment fee for general practice and primary care model	6 questions
	M-Factor3	Knowledge of general practice and skill sets	4 questions
	M-Factor4	Making appointment system and using patient portal to receive clinical report	3 questions

Table II.
Details of the consultation model factors in each questionnaire

Factor	Accumulated variance contribution rate	Items included	Cronbach's α	Acceptance range		
				Agree	Neutral	Disagree
P-Factor1	16.314	13, 14, 11, 12, 15	0.867	25–35	20	5–15
P-Factor2	32.078	7, 6, 8, 5, 9, 10	0.876	30–42	24	6–18
P-Factor3	45.120	20, 19, 21	0.840	15–21	12	3–9
P-Factor4	58.146	1, 2, 4, 3	0.837	20–28	16	4–12
P-Factor5	69.731	17, 16, 18	0.912	15–21	12	3–9
Total			0.914			

Table III.
Factor analysis of patients' final questionnaire

Factor	Accumulated variance contribution rate	Items included	Cronbach's α	Acceptance		
				Agree	Neutral	Disagree
M-Factor1	36.274	9, 10, 8, 7, 6, 5	0.617	30–42	24	6–18
M-Factor2	18.629	12, 13, 14	0.663	15–21	12	3–9
M-Factor3	52.822	2, 3, 4, 1	0.656	20–28	16	4–12
M-Factor4	64.832	15, 16, 17	0.712	15–21	12	3–9
Total			0.742			

Table IV.
Factor analysis of medical staff final questionnaire

The potential sources of patient acceptance of the new consultation model are mainly from having previous experiences with GP visits and having been overseas to live or to study.

Table V shows the patient participants' demographics and average scores for each factor rated by the patients and classified by individual characteristics. In general, none of the patient participants showed a negative attitude (disagree) towards any of the five consultation model factors in the patient questionnaire. However, most of the patient participants showed an attitude between "Agree" and "Neutral" towards P-Factor1, P-Factor2 and P-Factor5.

Table VI shows a variance analysis for the influence of individual patient characteristics on each factor. There are eight individual characteristics that have at least one significant influence on the five consultation model factors in the patient questionnaire.

Table VII summarizes the individual patient characteristics that have a lower acceptance score in the consultation model factors. In detail, GP Visiting Experience has a significant impact on all five factors. Patients who have never experienced a GP visit have lower scores on all five factors. Overseas living experience significantly affects the P-Factor1, P-Factor2, P-Factor3 and P-Factor5. Patients without experience living oversees have lower acceptance scores. Overseas GP visiting experience significantly affects the P-Factor2, P-Factor3 and P-Factor5. Similarly, patients without such experience showed more negative attitudes. Moreover, Visiting GP or specialized clinic affects the P-Factor1 and P-Factor2, as patients visiting specialized clinics had lower acceptance scores. Last but not least, Female and Lower Education Level were associated with lower scores on P-Factor5 only; Patients without Overseas Study Experience have lower scores on P-Factor2 only; and Source of Medical Cost impacts P-Factor3, as those without Shenzhen medical insurance have lower acceptance scores.

To conclude, patients without experience of GP services (local or abroad) showed a lower acceptance of the consultation model factors. Patients who came for GP services showed a more positive attitude and were more willing to accept GP services. Other inherent or social characteristics, such as gender, educational level and medical payment method, might also be factors related to resistance in the patient's acceptance of the new consultation model.

The potential sources of resistance to medical staff's acceptance of the new consultation model mainly stem from occupation, education, GP training certificate and having specialist experience.

Table VIII shows the medical staff participants' demographics and average scores for each factor rated by patients and classified by individual characteristics. Overall, no medical staff participant shows a negative attitude (Disagree) towards any of the four consultation model factors in the staff questionnaire.

Table IX presents a variance analysis of the influences of individual staff characteristics on each factor. In detail, except for the length of participation, all other individual characteristics of medical staff have at least one significant influence on the four consultation model factors in the medical staff questionnaire.

Table X summarizes the staff individual characteristics that have a lower acceptance score in the consultation model factors. First, of the above influential individual characteristics, Occupation shows a significant impact on all four factors. Staff other than doctors, nurses, pharmacists and lab technicians have lower scores for M-Factor1, M-Factor2 and M-Factor4. Lab technicians showed a less positive attitude towards M-Factor3. Moreover, Education Level, Specialist Working Experience and GP Training Certificate all show significant impacts on the M-Factor1, M-Factor2 and M-Factor3. Staff with education levels below college and without specialist work experience or a GP training certificate showed a more negative attitude on the above three factors.

Furthermore, other characteristics that show significant impacts on fewer factors are categorized into two main characteristics: inherent or acquired characteristics.

Individual characteristics	n	Constituent ratio (%)	Mean				
			P-Factor1	P-Factor2	P-Factor3	P-Factor4	P-Factor5
Visits							
First	417	40.9	25.040	26.710	17.290	23.150	14.870
Established	603	59.1	24.610	26.730	17.340	23.520	14.930
Clinic							
General Clinic	251	24.6	25.770	29.000	17.600	23.380	15.350
Specialty Clinic	769	75.4	24.460	25.970	17.230	23.360	14.760
Gender							
Female	613	60.1	24.470	26.430	17.330	23.240	14.570
Male	407	39.9	25.250	27.150	17.310	23.560	15.410
Age							
16–19	20	2.0	24.700	27.600	17.650	24.100	13.900
20–29	251	24.6	24.500	27.140	17.310	23.550	14.850
30–39	438	42.9	25.190	27.050	17.420	23.240	14.900
40–49	149	14.6	24.060	25.790	17.540	23.600	15.340
50–59	92	9.0	25.010	25.340	16.450	22.650	14.680
⩾60	70	6.9	24.510	26.660	17.310	23.730	14.790
Education level							
Middle school or below	79	7.7	24.460	26.380	17.670	23.660	14.730
High school/technical secondary school degree	157	15.4	24.960	25.850	17.260	23.150	14.210
Junior college	227	22.4	24.720	26.900	17.400	23.330	14.520
Bachelor's	421	41.2	24.890	26.970	17.260	23.330	15.120
Master's	126	12.4	24.480	26.550	17.110	23.610	15.790
Doctoral	10	1.0	25.400	30.500	19.100	23.700	15.600
Overseas living experience							
Yes	144	14.1	26.120	28.740	18.030	23.570	15.780
No	876	85.9	24.560	26.390	17.210	23.330	14.760
Overseas study experience							
Yes	113	11.1	24.990	28.220	17.350	23.120	15.190
No	907	88.9	24.760	26.530	17.320	23.400	14.870
General clinic visit experience							
Yes	423	41.5	26.380	28.760	17.950	23.670	15.590
No	597	58.5	23.650	25.270	16.880	23.160	14.420
Overseas general clinic visit experience							
Yes	110	10.8	25.660	28.950	18.350	23.430	16.050
No	910	89.2	24.680	26.450	17.200	23.360	14.770
Source of patients							
Shenzhen	804	78.8	24.920	26.800	17.360	23.450	14.930
Outside Shenzhen	67	6.6	25.070	27.580	17.370	23.160	14.520
Guangdong province except Shenzhen	126	12.4	23.830	25.830	16.940	23.260	14.820
Other province	23	2.3	24.430	26.350	18.000	21.780	15.520
Source of medical cost							
Shenzhen medical insurance	682	66.9	25.000	26.740	17.260	23.430	14.940
Non-Shenzhen medical insurance	20	2.0	22.850	26.950	14.950	22.800	14.500
Commercial medical insurance	8	0.8	23.630	28.250	16.630	23.630	16.750
Private expense	310	30.4	24.450	26.620	17.630	23.250	14.810
Total questionnaire	1,020	100	24.780	26.720	17.320	23.370	14.900

Table V.
Average scores for
each factor by patient
characteristics

Individual characteristics	P-Factor1	P-Factor2	P-Factor3	P-Factor4	P-Factor5
First or return visit					
F	1.108	0.002	0.051	2.665	0.06
Sig.	0.293	0.963	0.821	0.103	0.806
General or specialist clinic					
F			1.887	0.006	3.621
Sig.	0.007*	0.000*	0.17	0.938	0.057
Gender					
F	3.61	2.11	0.014	2.12	9.605
Sig.	0.058	0.147	0.907	0.146	0.002*
Age					
F	0.892			1.49	0.609
Sig.	0.486	0.544	0.443	0.19	0.693
Degree					
F	0.17		0.759	0.388	2.643
Sig.	0.974	0.456	0.58	0.857	0.022*
Overseas living experience					
F	7.398	11.617	6.303	0.561	7.146
Sig.	0.007*	0.001*	0.012*	0.454	0.008*
Overseas study experience					
F	0.135	4.819	0.009	0.621	0.593
Sig.	0.713	0.028*	0.925	0.431	0.441
General clinic visit experience					
F				5.336	
Sig.	0.000*	0.000*	0.000*	0.021*	0.000*
Overseas general clinic visit experience					
F	2.355	10.409		0.036	9.133
Sig.	0.125	0.001*	0.002*	0.85	0.003*
Source of patients					
F	1.14	0.884		1.84	0.373
Sig.	0.332	0.449	0.749	0.138	0.773
Source of medical cost					
F	1.246	0.13	3.751	0.377	0.631
Sig.	0.292	0.942	0.011*	0.769	0.595

Note: *Significant at $p \leqslant 0.05$

Table VI.
Variance analysis of the factor influences of patient characteristics

First, Gender and Age are categorized as inherent characteristics, FEMALE staff and YOUNGER staff have a lower degree of acceptance of M-Factor2, M-Factor3 and M-Factor1, respectively. Second, postnatal characteristics can be divided into social position (department/job title) and experience (living/training/practicing/studying). For social position, those who scored lower are JUNIOR staff, with lower scores on M-Factor1, and staff from the GP department with lower scores on M-Factor1 and M-Factor3. For social experience, by and large, staff with NO overseas experience (living/training/ practicing/studying) and NO relevant GP work experience showed a lower degree of acceptance. Such lack of overseas and practice experiences related to a low acceptance of GPR. In addition, M-Factor2 is graded lower by staff lacking GP work experience and an overseas bachelor's degree, while M-Factor4 is graded lower by staff without overseas living experience.

In summary, different occupations show significantly different attitudes towards all four factors. Lab technicians and other occupations have lower acceptance than doctors, nurses and pharmacists. Staff with a lower educational level or without a general training certificate show less acceptance of the new model. Staff without specialist experience showed similarly lower acceptance of the new model. Gender, age and other different social positions and experiences have less impact but might also contribute to staff resistance to the new consultation model.

Overseas experiences, related consultation experiences, gender, and education are common potential sources of resistance in both patient's and staff's acceptance.

Last, the results from the patient and staff surveys reveal a common pattern in the factors affecting people's acceptance of the new consultation model. In general, females or people with a lower educational level, no overseas experiences or no related consultation experiences showed lower acceptance.

Discussion
Implications and suggestions
This study introduced a new consultation model of "Primary Care by General Practitioners and Secondary Care by Specialists" in China. Our study results indicated that participants' acceptance level of the new consultation model was associated with their education level; gender; whether having overseas experience; whether having prior experience seeing a GP. In general, the study participants were more in favor of the traditional physician visit practice rather than adopting the new consultation model. Our findings suggested that process reengineering and innovation is a complicated, difficult, and multiple dimensional organizational change. Evaluating and managing resistance is part of an implementation strategy in change management (Trader-Leigh, 2002). According to Hultman (2003), people's resistance behaviors are caused by mindset issues in which people's personal facts (objective realities), beliefs (subjective assumptions, conclusions, and predictions) and values (conceptions about what is important in life) are the most important factors. When people process thoughts, they are more likely to consider their beliefs to be reality and overlook facts (Hultman, 2003). In terms of change management, when people's beliefs in the benefits of old processes are stronger than those for new processes, and they take these beliefs as reality, they will consider the old ways of doing things to be more important and will resist change (Hultman, 2003). In this context, if managers want to make a change, they need to provide more facts to form a stronger evidence base for the benefit of the new processes.

Apart from people's beliefs as being a deeper cause of resistance, our study also wonders if change management itself failed to reduce the resistance. As mentioned at the

Influential individual characteristics	P-Factor1	P-Factor2	P-Factor3	P-Factor4	P-Factor5
GP visiting experience	None	None	None	None	None
Overseas living experience	None	None	None	/	None
Overseas GP visiting experience	/	None	None	/	None
Visiting GP or specialized clinic	Specialist	Specialist	/	/	/
Gender	/	/	/	/	Female
Education level	/	/	/	/	Lower
Overseas study experience	/	None	/	/	/
Source of medical cost	/	/	Non-Shenzhen medical insurance	/	/

Note: /, means that the individual characteristic has no significant influence on the factor

Table VII.
Detailed influential individual patient characteristics associated with a lower acceptance score in consultation model factors

Individual characteristics	n	Constituent ratio (%)	Mean			
			M-Factor1	M-Factor2	M-Factor3	M-Factor4
Gender						
Female	150	74.3	15.780	31.220	18.780	16.000
Male	52	25.7	16.120	33.330	20.400	16.540
Age						
20–29	71	35.1	14.640	31.040	18.520	15.870
30–39	105	52.0	16.390	32.630	19.330	16.340
40–49	23	11.4	16.740	29.390	20.230	15.570
50–59	2	1.0	19.500	34.000	20.000	19.000
Over 60	1	0.5	21.000	42.000	28.000	21.000
Degree						
Middle school or below	1	0.5	21.000	42.000	28.000	21.000
High school/technical secondary school	1	0.5	20.000	21.000	23.000	18.000
Junior college	31	15.3	13.720	29.700	18.120	15.630
Bachelor's	108	53.5	16.020	31.580	18.710	15.830
Master's	48	23.8	16.630	33.710	20.570	16.850
Doctoral	13	6.4	16.230	31.080	19.730	16.690
Dept.						
General	14	6.9	18.29	34.00	23.14	16.42
Specialist	122	60.4	16.52	31.93	18.86	16.40
Technician	42	20.8	13.27	29.77	18.57	14.90
Others	24	11.9	15.71	33.13	19.71	16.79
Occupation						
Doctors	68	33.7	17.340	33.310	20.680	16.980
Nurses	100	49.5	16.020	31.730	18.430	16.110
Pharmacists	8	4.0	15.130	29.500	19.380	15.630
Pathology	14	6.9	12.500	29.070	18.000	14.430
Others	12	5.9	10.690	28.000	18.420	13.920
Title						
Junior	98	48.5	14.990	31.440	18.600	16.110
Intermediate	69	34.2	16.630	32.450	19.640	16.260
Vice senior	22	10.9	17.730	32.480	19.760	15.230
Senior	8	4.0	15.380	27.380	19.800	17.500
Others	5	2.5	15.200	32.600	21.200	16.800
Participation						
Half to a year	75	37.1	16.670	32.920	19.410	16.750
Over a year	127	62.9	15.370	31.220	19.100	15.830
GP experience						
Y	12	5.9	17.750	35.450	23.420	17.070
N	190	94.1	15.750	31.530	18.930	16.080
Specialist experience						
Y	75	37.1	16.960	33.000	20.560	16.570
N	127	62.9	15.220	31.040	18.390	15.880
Overseas training/learning experience						
Y	30	14.9	17.230	32.630	20.790	17.270
N	172	85.1	15.630	31.610	18.920	15.940

Table VIII.
Average scores for each factor rated by medical staff classified by individual characteristics

Individual characteristics	n	Constituent ratio (%)	M-Factor1	Mean M-Factor2	M-Factor3	M-Factor4
Overseas living experience						
Y	20	9.9	17.400	33.200	21.800	17.850
N	182	90.1	15.700	31.610	18.910	15.950
Overseas GP experience						
Y	3	1.5	16.000	37.330	24.670	18.670
N	199	98.5	15.870	31.680	19.110	16.100
Bachelor's degree						
Domestic	133	96.7	15.860	31.610	19.050	16.070
Abroad	6	4.3	16.170	37.000	23.830	18.170
Master's degree						
Domestic	93	91.2	15.740	31.780	19.500	16.340
Abroad	9	8.8	16.330	33.560	23.440	17.330
GP training certificate						
Y	13	6.4	18.770	35.330	22.450	17.140
N	189	93.6	15.670	31.520	18.970	16.070
Total questionnaire	202	100	15.870	31.770	19.200	16.140

Table VIII.

introduction, our study chose participative BPR to avoid the weaknesses of radical BPR. Nevertheless, participative BPR is said to have similar problems to radical BPR, such as negatively affecting staff's levels of comfort, confidence, competence and control, particularly when leaders fail to provide enough retraining during the change management process (Davenport and Stoddard, 1994; Huq and Martin, 2006). Moreover, due to the limited organizational resources, HKU-SZH could not conduct an ERP-driven BPR, which the literature argues can overcome the weaknesses of the above two types (Davenport and Stoddard, 1994; Koch, 2001; Huq and Martin, 2006). Overall, apart from assessing resistance related to human factors, rethinking the BPR process is also important. However, since the latter is not the focus of this paper, future studies must explore this aspect.

We believe that to implement the new model effectively and efficiently, it is essential to have both patients and medical staff "buy in." For patient population, several suggestions are drawn from the survey results. In general, we suggest that more attention should be given to promote GP knowledge and acceptance of the new model of "Referring patients to specialists only after consultation with general practitioners." This is intended to be the new normal in Chinese health practice. Providing positive facts about the new model to influence beliefs and values, and generating more opportunities for people to experience GP service.

In detail, the following suggestions are proposed for the purpose of reducing patients' resistance to the new model: improving appointment systems so that hospitals can better manage and plan their services, and also save waiting time for patients; Exploring innovative methods for medical charges and payments; and promoting the benefits of specialist team consultation through television, newspapers, magazines and other media. Establish "zero distance" to close the gaps between general practitioners and local residents by educating the public about GP and to expect it personally when entering the medical care setting. Some suggested approaches include: inviting foreign experts on GP from Canada, Australia, and USA, just to name a few to present and promote education materials on GP concepts and benefits to local communities in Shenzhen area; and to demonstrate case

Individual characteristics	M-Factor1	M-Factor2	M-Factor3	M-Factor4
Gender				
F	0.230	4.046		0.944
Sig.	0.632	0.046*	0.013*	0.332
Age				
F	2.836	2.836	2.304	1.180
Sig.	0.026*	0.026*	0.06	0.321
Degree				
F	2.419		3.429	1.233
Sig.	0.037*	0.033*	0.005*	0.295
Dept.				
F	8.251	2.258	5.937	2.354
Sig.	0.000*	0.083	0.001*	0.073
Occupation				
F	10.006	2.874	4.051	3.271
Sig.	0.000*	0.024*	0.004*	0.013*
Title				
F		1.245	1.275	0.751
Sig.	0.03*	0.293	0.281	0.559
Length of employment in HKU-SZH				
F		2.439	0.185	
Sig.	0.083	0.120	0.668	0.189
GP experience				
F		4.098	15.894	0.924
Sig.	0.121	0.044*	0.000*	0.338
Specialist experience				
F	7.878	4.305	15.513	
Sig.	0.005*	0.039*	0.000*	0.231
Overseas training/study experience				
F	3.561	0.618	6.001	3.793
Sig.	0.061	0.433	0.015*	0.053
Overseas living experience				
F	2.814	1.067	10.254	5.537
Sig.	0.095	0.303	0.002*	0.020*
Overseas practice experience				
F	0.003	2.218	6.083	1.624
Sig.	0.957	0.138	0.014*	0.204
Bachelor's degree				
F	0.029	4.016	9.003	2.129
Sig.	0.864	0.046*	0.003*	0.146
Master's degree				
F	0.15	0.642	7.912	0.659
Sig.	0.699	0.425	0.006*	0.419
GP training certificate				
F			9.982	1.167
Sig.	0.011*	0.039*	0.002*	0.281

Note: *Significant at $p \leqslant 0.05$

Influential individual characteristics	M-Factor1	M-Factor2	M-Factor3	M-Factor4
Occupation	Other	Other	Lab Technician	Other
Education level	College	Technical secondary school or below	College	/
Specialist work experience	None	None	None	/
GP training certificate	No	No	No	/
Staff Dept.	GP	/	GP	/
Gender	/	Female	Female	/
Overseas living experience	/	/	None	None
GP working experience	/	None	None	/
Age	Younger	Younger	/	/
Bachelor's degree (domestic/overseas)	/	Domestic	Domestic	/
Master's degree (domestic/overseas)	/	/	Domestic	/
Overseas clinical practice experience	/	/	None	/
Overseas training/study experience	/	/	None	/
Title	Junior	/	/	/

Note: /, means that the individual characteristic has no significant influence on the factor

studies on how the GP works. The key purpose of these activities is to enhance the acceptance of GP concepts and understanding of the skill set of general practitioners. Strengthen information provision and the education of patients visiting specialists by showing promotional videos, distributing brochures and other forms of activities in specialist clinic waiting areas. Establish patient portal system, so the communication between patients and providers can be delivered through electronic or digital devices. Therefore, enable patients in different locations or remote areas to directly query clinical results from a networking platform.

In order to reduce medical staff resistance to the new consultation model, several suggestions were made: strengthening GP education for the medical staff – HKU-SZH is a new hospital and, according to the target, with full capacity, the total number of its medical staff will increase to 3,936 from the existing 1,200; these staff will come from all over China. Therefore, before the new medical staff begins to work, education about the GP model, the specialist team consultation pattern, innovative medical charges and other new measures should be conducted. In addition, consistent professional lectures on GP concepts and practice approach should also be held as continuous education materials at the hospital so that the medical staff can learn more and quickly about any new process reengineering ideas. Strengthening training for general practitioners. By using its collaboration platform with the University of Hong Kong, the hospital should send doctors from the general department to the Hong Kong GP Training Base for professional training to improve their technical skill level and self-confidence, thereafter to reduce the psychological barriers and resistance to the organizational change. Sending medical staff to visit the University of Hong Kong. The hospital should send medical technicians, pharmacists, nurses, and even administrative staff to the University of Hong Kong GP Training Base to gain real-world experience with the internationally well-known practice model with GP, and referral concepts. It is important to improve their knowledge and acceptance of the new practice model, and be the leading source of the medical reform for the general direction of development in the hospital, medical system and even the entire country.

Limitations of the study
The Hong Kong University-Shenzhen Hospital is a new hospital that has directly introduced the consultation model of "Transference to Specialized Departments after Consultation with

General Practitioners" since it went into operation. Therefore, this study could not provide a comparative study between "before" and "after" outpatient workflow process reform. Second, the fact that the study is conducted in only one hospital hinders the possibility of generalizing the results. This may have also impacted the representativeness of the sample. In addition, we considered Lewin's change management model to be the original and the most authoritative. However, since we adopted it in our study, we have noted that there are deficiencies and limitations in the model. We have subsequently identified a more complete model developed based on Lewin's theory. Thus, the model we used in our study might affect the output of the BPR.

Future studies
Our findings suggested some areas that are worth future study. First, both the patient and medical staff participants are mostly female, which might show that females' related experiences and opinions about the new consultation model are important for its further development. Thus, future relevant studies may focus more on this gender group to identify additional potential sources for acceptance to develop the new consultation model. Second, education factors might also be worthy of exploration. According to Schommer's (1998) empirical study, people's epistemological beliefs can be affected by education. In this context, educational experience might impact individuals' attitude towards new social phenomenon. An example can be one of the results in this paper that less educated people showed lower acceptance of the new consultation model. Thus, one potential source of resistance to recognizing the new change lies in education. Third, our study also revealed that for a better GP experience, efforts should not only be made around the patient's experience but should also include the medical staff's experience with practicing the new concept. Further study can be conducted on how to improve patient visits and medical staff's practice experiences with GP. In addition, an interesting finding in the paper is related to specialist consultations: those who have lower acceptance of the new model were medical staff with NO specialist work experience and patients WITH specialist visiting experience (Tables VII and X). More detailed surveys need to be conducted to explore how specialist experience may influence acceptance of the new consultation model. Last but not least, future studies may focus on assessing the process of implementing BPR in the hospital to uncover potential factors leading to the failure of BPR.

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