Exploring and Developing Items Measuring Patient Engagement

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EXPLORING AND DEVELOPING ITEMS MEASURING PATIENT ENGAGEMENT

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Abstract Background: The patient engagement concept combines patients' knowledge, capacity, and readiness to manage healthcare to encourage a positive patient attitude. This concept includes three components: attributes, precedence, and consequences, which are then represented by personalization, access, commitment, and therapeutic alliances. Previous research has resulted in the national implementation of patient engagement. However, the application lacks a fundamental understanding of the theory and precedence behind its implementation. This study aimed to (1) develop, validate, and pilot test three sets of questionnaires to estimate the attributes contributing to patient engagement between personalization, access, commitment, and therapeutic alliances (PACT) among patients, doctors, and administrators in Klang Valley, and (2) describe the PACT of patients, doctors, and administrators in Klang Valley. ***Methodology:*** There were three sets of questionnaires developed, one for patients, one for doctors, and one for administrators. Psychometricians, researchers, and experts evaluated the sets of questions for construct suitability, content validity, and reliability. Then, the pilot survey included 250 randomly selected, consenting respondents: 100 patients, 100 doctors, and 50 administrators. A descriptive data analysis was performed. ***Main Findings*** Descriptive data for demographics and four attributes of patient engagement (PACT) were collected and tabulated, including mean, standard deviation, and frequency. Further research is required to investigate the relationship between each attribute of patient engagement and demographics, as well as to statistically analyze the concept of patient engagement for each sample group.

Keywords— engagement, module, healthcare, attribute, patient

I. INTRODUCTION

Patient engagement is a concept that combines patients' knowledge, capacity, and readiness to make decisions regarding their healthcare interventions[5]. Patient engagement is frequently associated with shared decision-making (SDM) between patients and healthcare providers, which promotes better patient outcomes, greater patient satisfaction, and good physical and mental well-being[9][5].

Based on Higgins et al patient engagement framework[1], the concept encompasses attributes, antecedence, and consequences components. The components can be further represented by personalization, access, commitment, and therapeutic alliances[1]. These four major attributes of patient engagement proposed by Higgins et al[6] reflect the range of the concept application[2]. Previous studies mostly assessed only one aspect of patient engagement which led to inaccurate conclusions and theory proposed. These conclusions and theories led to the various unverified application of patient engagement concepts around the world since there was still no standardized concept established. More extensive duration and robust studies are needed to identify potential confounding factors (for example, ethnicity, religion, health-conscious, family, and social environment) and identify factors that are most critical to producing desired health outcomes. Shortcomings in the knowledge of the concept caused the development of an ineffective patient engagement model which then led to a failure of concept delivery. Success in the delivery of patient engagement was not achievable due to the absence of a functional patient engagement model. In a multiracial society such as Malaysia, the limited understanding and application of this concept necessitate further studies to be conducted to understand the underlying theory and antecedents of the concept better. Major attributes that contribute the most to patient engagement need to be evaluated to provide an ideal module for the development of concept methods and instruments. On the other hand, the complexity of patient engagement may result in missing some important features of patient engagement, leading to an ineffective assessment of complex dynamics during delivery and monitoring of patient engagement[6].

As support to patient engagement in clinical practice, several actions were proposed by G. Tobiano et.al. (2020) by integrating the usage of an Interactive Care Model. The operation is ideal to be performed during training processes using the materials and evaluative instruments of the model[4]. To ensure good patient engagement and improvement of health outcomes, more research is needed to understand the concept better[4]. Therefore, this research generally aims to identify underlying antecedents and theories regarding patient engagement and develop a model suitable for a multiracial setting. The expected outcome will be an improved understanding of patient engagement from various perspectives, which will aid in developing an effective model of patient engagement and enhance population health.

II. METHODOLOGY

A. Questionnaire development

There were three sets of questionnaires developed for patients, doctors, and administrators respectively. Questionnaire development was based on Higgin's concept which comprised the 4 attributes of personalization, access, commitment, and therapeutic alliances (PACT)[1]. A discussion was conducted among medical and social sciences experts to develop a set of suitable questions based on each component of PACT. These questions were newly created or modified from 2 major sources and their suitability for the multiracial setting was ensured:

1. PCORI patient engagement survey (http://pcori.org.Blog/Attitudes-Towards-CER)[7]
2. The Quality of patient engagement and involvement in primary care: The King’s Fund 2010 by S. Parsons et al.

Dichotomous questions, multiple-choice questions, important or rating scale, and close and open-ended questions were prepared for each component of PACT

B. Pre-test

Face validation is essential for quantitative survey research, to examine any concerns about the questionnaire such as unsuitable concepts and inappropriate language[25]. During face validation of the questionnaire, the Experts' and Practitioners' perspectives were included in the questions[12]. Experts’ opinions were necessary to scrutinize and identify problematic issues during variables computing in advance whereas practitioners' opinions are essential for the sensitivity of the items. The current research implies experts as academicians and statisticians and practitioners as social workers[14].

This study collected data in three stages: a pre-test, face validity, and then a pilot study to ensure question sensitivity to the respondents' language and cultures , corresponding to the variables[13].

In the pre-test phase, the questionnaire was reviewed and examined by thirty external experts and practitioners to review the reliability of the questionnaire and to ensure that it measured accurate data. Pre-testing is carried out by five academics in the medical and statistics field in local universities. The researcher selected the experts and practitioners by a judgment sampling method considering their experience in treating patients in hospitals and expertise in social research and statistics. The method in which the researcher is involved "in the selection of the subjects who are most effective in the best position to utilize the information required" is referred to as judgment sampling[11].

The researcher sent an email to experts and practitioners inviting them to participate in the survey, as well as requesting a review to identify any vague and inappropriate questions. The researcher made the survey available to the reviewers in English and Malay languages to ensure that the translated survey's chosen words were appropriate, and to allow reviewers to compare the items to the original English survey[17]. The reviewers were asked to rate (1) the suitability of the wording, (2) the questionnaire organization, and (3) the clarity of the items. The researcher corrected the instrument according to the reviewers' feedback and modified it accordingly. The modified questionnaire was then introduced.

C. Validation (face and content validation)

Validity is known as the level of depiction precision of the theory of interest on a scale or series of assessments[20]. An essential feature of validity is the level to which a measure reflects what it is designed to measure[25].

The face and content validity classifications are used in this study. Face validity is referred to as the degree to which the instrument addresses and analyses key points of the research area, whereas content validity is referred as the degree to which information acquired via a certain instrument corresponds to the ideal substance to be estimated[15]. During the face validation stage, the set of questions was assessed by psychometricians for review on the questions' construct, validity, and reliability. The suitability of the questions for testing was then ensured. Content validation was performed by researchers and experts to determine the question representation and theme. The corrections and comments were then analyzed, and modifications were made before the pilot study.

D. Pilot test

A pilot study is essential for the development of the research's quality and efficiency. It's also done to evaluate the safety of interventions and recruitment potentials, examine the randomization and blinding process, enhance researchers' expertise with the study methodology and interventions, and provide sample size estimations[17].

After a validation was obtained, a pilot study was conducted at University Malaya Medical Centre (UMMC), Universiti Kebangsaan Malaysia Medical Centre(UKMMC), Hospital Pengajar Universiti Putra Malaysia (HPUPM), and Faculty of Medicine and Health Sciences, Islamic University of Science (USIM). 100 patients, 100 doctors, and 50 administrators were randomly selected to fill in the questionnaire sheets as respondents. For patients and doctors, 30 respondents were from UMMC, 30 respondents were from UKMMC, 20 respondents were from HPUPM, and the remaining 20 respondents were from FPSK USIM. Meanwhile, the ratio of administrators respondents for UMMC:UKMMC:HPUPM:USIM was 20:20:5:5. The sample size is calculated in dependence on the size and functionality of the study site. Each respondent was explained with regard to the nature of this pilot study. Consent is taken and demographics documented. The questionnaires are distributed using a cross-sectional method with printed and online systems (google forms) to ease the collection[3]. For improvement purposes, the subjects were allowed to comment, clarify and reason regarding the questionnaire contents. Once completed, the questionnaires and comments were collected and analyzed. Changes are then made to the questionnaires based on the validation and reliability calculation taking into account the comments from participants. The internal reliability score was calculated from this data. Finally, a re-test was conducted to determine the understanding and reliability.

E. Descriptive Analysis

After completing the pre-testing, validity, and pilot testing processes, the researcher amended the item statements based on the reviewers' comments. The researcher conducted a cross-sectional structured survey inclusively on medical students, volunteered civilians, doctors and administrators. 100 participants participated from each sample group which was patients, doctors, and administrators. The data were randomly collected. The researcher utilized a descriptive analysis to describe the demographics and attributes of the respondents based on PACT. The analysis was done using SPSS software version 23.

III. RESULT AND DISCUSSION

This study applied the interval scale between 1 (strongly disagree) and 5 (strongly agree) with the given element statement to measure this construct with its 32 elements in the instrument for patients, 20 elements in the instrument for doctors, and 14 elements in the instrument for administrators[17]. Measurement of every item for patients is shown in Tables 1, 2, and 3 presenting the mean and standard deviation score for every element.

A. Demographics

i. Patients

The mean age of the respondents from the patient sample group was 38.51 with a standard deviation of 8.341. The range of the respondents' age was 54years. The respondents consisted of 56 males and 44 females, with 81 Malay, 11 Chinese, and 6 Indian respondents respectively. There were two respondents of different minority races which were Siamese, and Serani. Following the highest education level item, 2 respondents received primary education, 12 respondents received secondary education, 7 respondents received professional certificates, 24 respondents received a diploma, 40 respondents received a first Bachelor's Degree, and the remaining 15 respondents received either a Master's Degree or a Ph.D. certificate. Table 1 gives the demographic details of the participants.

Properties		Frequency	Percentage (%)
Sex	Male	56	56
	Female	44	44
Race	Malay	81	81
	Chinese	11	11
	Indian	6	6
	Orang asli	0	0
	Others	2	2
Highest Education Level	Primary school	2	2
	Secondary school	12	12
	Professional certificate	7	7
	Diploma	24	24
	First degree	40	40
	Master/ PhD	15	15
Marital Status	Married	75	75
	Single	24	24
	Divorcee	1	1
Employment status	Government servants	50	50
	Private sector	27	27
	Self-employed	11	11
	Unemployed	12	12
Monthly Income	T20	15	15
	M40	43	43
	B40	42	42
Year after diagnosis	0-3 years	46	46
	3-6 years	19	19
	6-9 years	7	7
	>10 years	28	28

Table 1. Demographic Details of the Patient Respondents (N=100)

The result showed that most patient respondents are encompassed by male gender, Malay race, educated with first degree, married, government servants, B40 group, and have been medically diagnosed within 0-3 years.

ii. Doctors

The mean age of the respondents from the doctor sample group was 31.14 with a standard deviation of 5.791. The range of the respondents' age was 26years. The respondents consisted of 46 males and 54 females, with 61 Malay, 15 Chinese, and 24 Indian respondents respectively. Table 2 gives the demographic details of the participants.

Properties		Frequency	Percentage (%)
Sex	Male	46	46
	Female	54	54
Race	Malay	61	61
	Chinese	15	15
	Indian	24	24
	Orang asli	0	0
	Others	0	0
	Houseman	42	42

Designation	Medical officer	41	41
	Specialist	13	13
	Administrators	4	4
Year of experience	<2 years	45	45
	2-5 years	11	11
	5-10 years	29	29
	>10 years	15	15
Place of practice	Health Clinic	0	0
	District health office	0	0
	Hospital	100	100

Table 2. Demographic Details of the Doctor Respondents (N=100)

In Table 2, the result showed that most doctor respondents are encompassed by female gender, Malay race, housemen, having less than 2 years of experience, and working in a hospital.

iii. Administrators

The mean age of the respondents from the administrator sample group was 40.04 with a standard deviation of 6.581. The range of the respondents' age was 32years. The respondents consisted of 21 males and 29 females, with 39 Malay, 5 Chinese, 4 Indian, and 2 Orang Asli respondents respectively. In accordance with the designation of the respondents, 7 respondents were the highest management officer, 9 respondents were the heads of department, 2 respondents were specialists or consultant administrators, 31 respondents were administrative officers, and the remaining 1 respondent was an administrative ward sister. Table 3 gives the demographic details of the participants.

Properties		Frequency	Percentage (%)
Sex	Male	21	21
	Female	29	29
Race	Malay	39	39
	Chinese	5	5
	Indian	4	4
	Orang Asli	2	2
	Others	0	0
Designation	Highest management	7	7
	Head of department	9	9
	Specialist/ consultant administrator	2	2
	Administrative officer	31	31
	Others	1	1
Year of experience	<2 years	2	2
	2-5 years	5	5
	5-10 years	13	13
	>10 years	30	30
Place of practice	Ministry of Health	3	3
	Health district office	0	0
	Hospital	47	47

Table 3. Demographic Details of the Administrators Respondents (N=50)

The result showed that most administrator respondents are encompassed by female gender, Malay race, heads of departments, having more than 10 years of experience, and working in a hospital.

B. Personalization

Constructed items were used to measure the first attribute of patient engagement proposed by Higgins et al[1] which was personalization. Each item used a Likert scale to measure the level of agreement from 1-strongly disagree to 5-strongly agree. Table 4, 5, and 6 show the mean and standard deviation of each item rated by patients, doctors, and administrators respondents respectively.

No.	Item Statement	Mean	Std. Deviation	Percentage (%)
1	Patient engagement is important in healthcare for patients.	4.87	.405	0 (SD) 1 (D) 2 (NS) 11 (A) 86 (SA)
2	I am comfortable getting treatment from a doctor of any race	4.09	1.083	2 (SD) 4 (D) 11 (NS) 38 (A) 45 (SA)
3	Language barrier with my health practitioner prevented me to understand my illness better.	3.04	1.413	19 (SD) 24 (D) 12 (NS) 31 (A) 14 (SA)
4	My education level plays an important role in my understanding of my illness.	4.11	1.049	1 (SD) 6 (D) 11 (NS) 33 (A) 49 (SA)
5	My cultural and religion backgrounds play a role in my compliance with treatment.	4.00	1.066	5 (SD) 8 (D) 16 (NS) 37 (A) 34 (SA)

6	I have good family support to assist me in managing my illness.	4.49	.695	0 (SD) 1 (D) 7 (NS) 27 (A) 65 (SA)

Table 4. Descriptive Analysis for Items Measuring Personalization for Patients

The result in Table 4 showed that most respondents agreed regarding the importance of patient engagement (item no.1), the comfort of getting treatment from a doctor of any race (item no.2), the role of education level in illness understanding (item no.4), the effect of cultural and religion background to compliance level (item no.5) and having good family support (item no.6). Big part of responses disagreed that language barrier between the patient and medical personnel inhibits the illness understanding (item no.2).

No.	Item Statement	Mean	Std. Deviation	Percentage (%)
1	Patient engagement is important in healthcare for doctors.	4.73	.467	0 (SD) 0 (D) 0 (NS) 20 (A) 80 (SA)
2	You are comfortable treating patients from any race.	4.27	1.009	0 (SD) 1 (D) 3 (NS) 29 (A) 67 (SA)
3	Language barrier is preventing me from understanding my patient better.	4.09	1.300	5 (SD) 5 (D) 8 (NS) 39 (A) 43 (SA)
4	It is easier to treat patients with higher education levels.	2.73	1.421	14 (SD) 17 (D) 24 (NS) 23 (A) 22 (SA)
5	I consider my patient's cultural and religious background during treatment.	4.09	.831	11 (SD) 5 (D) 12 (NS) 40 (A) 32 (SA)
6	Patients with poor family support usually have poor compliance.	4.73	.467	4 (SD) 11 (D) 13 (NS) 35 (A) 37 (SA)

Table 5. Descriptive Analysis for Items Measuring Personalization for Doctors

Table 5 showed that most respondents agreed regarding the importance of patient engagement (item no.1), the comfort of treating patients from different races (item no.2), the downfall of a language barrier to patient understanding (item no.3), consideration of cultural and religion background during treatment (item no.5) and effect of family support to patient compliance (item no.6). However, a big part of respondents were unsure regarding the role of education level with patient compliance (item no.4).

No.	Item Statement	Mean	Std. Deviation	Percentage (%)
1	Patient engagement is important in the healthcare system.	4.44	1.333	2 (SD) 0 (D) 0 (NS) 28 (A) 70 (SA)
2	Cultural differences are an obstacle to the implementation of a successful patient engagement program.	3.78	1.481	8 (SD) 26 (D) 22 (NS) 28 (A) 16 (SA)
3	Language barrier is a challenge to provide personalized patient care	4.11	1.364	4 (SD) 20 (D) 6 (NS) 42 (A) 28 (SA)

Table 6. Descriptive Analysis for Items Measuring Personalization for Administrators

In general, the result showed that most respondents agreed regarding the importance of patient engagement (item no.1), the effect of cultural differences on engagement (item no.5), and the challenge of a language barrier to patient treatment.

C. Access

In accordance with Higgins et al[1], access was the second attribute of patient engagement. Each item was constructed using a Likert scale to measure the level of agreement from 1-strongly disagree to 5-strongly agree. The items for patients were further categorized into three groups which were the source of information, consultation session, and therapeutic access. Table 7, 8, and 9 show the mean and standard deviation of items rated by patients in each group. Table 10 and 11 show the descriptive data for doctors and administrators.

i. Patients
a) Source of information

No.	Item Statement	Mean		Std. Deviation	Percentage (%)
1	Where did you go to	Health professional	4.05	1.038	0 (SD) 9 (D)

	look for information about health or medical-related topics?	(doctors/ nurses/ pharmacist)			24 (NS) 20 (A) 47 (SA)
		Internet	3.78	1.142	2 (SD) 14 (D) 24 (NS) 24 (A) 36 (SA)
		Disease focused group	2.77	1.302	18 (SD) 28(D) 29 (NS) 9 (A) 16 (SA)
		TV, radio, newspapers, magazines	2.86	1.215	11 (SD) 37 (D) 18 (NS) 23 (A) 11 (SA)
		Insurance company	1.94	1.081	45 (SD) 29 (D) 16 (NS) 7 (A) 3 (SA)
		Family and friends	3.22	1.268	7 (SD) 30 (D) 17 (NS) 26 (A) 20 (SA)
2	Which of the following main Internet sources have you used to get information about health-related topics?	Government health agency	3.88	1.281	4 (SD) 16 (D) 16 (NS) 16 (A) 48 (SA)
		Chat rooms, message boards, online communities	2.88	1.305	11 (SD) 40 (D) 17 (NS) 14 (A) 18 (SA)
		Insurance company website	1.87	0.928	40 (SD) 41 (D) 13 (NS) 4 (A) 2 (SA)
		Disease-focused group website	3.27	1.221	7 (SD) 22 (D) 29 (NS) 21 (A) 21 (SA)
3	How much do you trust the health-related information given by each of the following?	Health professional (doctors/ nurses/ pharmacist)	4.38	0.838	1 (SD) 1 (D) 14 (NS) 27 (A) 57 (SA)
		Internet	3.38	0.826	2 (SD) 10 (D) 42 (NS) 40 (A) 6 (SA)
		Disease focused group	3.47	0.958	4 (SD) 10 (D) 32 (NS) 43 (A) 11 (SA)
		TV, radio, newspapers, magazines	3.43	0.891	2 (SD) 12 (D) 36 (NS) 41 (A) 9 (SA)
		Insurance company	2.54	1.096	24 (SD) 20 (D) 35 (NS) 20 (A) 1 (SA)
		Family and friends	3.46	0.937	1 (SD) 14 (D) 37 (NS) 34 (A) 14 (SA)

Table 7. Descriptive Analysis for Items Measuring Access for Patients (Source of Information)

Table 7 showed that respondents mostly find medical information through health professionals, the internet, and family members. The mostly surfed websites by the respondents for medical information are government health agencies and disease-focused group websites. Health professionals, disease-focused groups, mass media, family, and friends are considered trustable among patient respondents.

b) Consultation session

No.	Item Statement	Mean	Std. Deviation	Percentage (%)
1	You are given enough opportunities to ask about your condition and treatment choice.	4.07	.915	1 (SD) 5 (D) 8 (NS) 42 (A) 44 (SA)
2	You are given understandable and enough information about your condition, disease progression, likely recovery, treatment, and referral.	4.09	.763	0 (SD) 4 (D) 9 (NS) 49 (A) 38 (SA)

3	You are given enough time to discuss your health problem and its treatment.	4.00	.953	0 (SD) 7 (D) 12 (NS) 43 (A) 38 (SA)
4	You are not feeling rushed as if you are wasting the doctors' time.	3.44	1.235	8 (SD) 11 (D) 13 (NS) 40 (A) 28 (SA)
5	You are given fast services in emergencies situation.	3.76	1.190	4 (SD) 2 (D) 21 (NS) 32 (A) 41 (SA)
6	Choose the ideal consultation duration that is suitable for you.	1.56	.503	35 (<35mins) 64 (30-45mins) 1 (>45mins)

Table 8. Descriptive Analysis for Items Measuring Access for Patients (Consultation Session)

Table 8 showed that most respondents agreed that they have the opportunity to discuss their treatment with health professionals. The respondents also agreed that they were given ample information and time regarding their overall treatment discussion. The consultation session experienced were relaxed, but efficient during emergencies. Overall, the respondents thought a consultation duration of 30 to 45 minutes was ideal.

c) Therapeutic access

No.	Item Statement	Mean	Std. Deviation	Percentage (%)
1	Easy access to healthcare facilities is important in managing my compliance with treatment.	4.69	.557	0 (SD) 0 (D) 2 (NS) 33 (A) 65 (SA)
2	Choose the ideal distance of a healthcare facility from home.	2.33	.769	5 (<1km) 57 (1-5km) 25 (5-10km) 13 (>10km)
3	It is easy to get an appointment or renew an appointment in government healthcare facilities.	3.16	1.167	4 (SD) 20 (D) 22 (NS) 32 (A) 22 (SA)

Table 9. Descriptive Analysis for Items Measuring Access for Patients (Therapeutic Access)

Table 9 showed most respondents agreed that easily accessible and bookable healthcare is important. Overall, a 1-5km distance between patients' accommodations with medical centers was considered ideal.

ii. Doctors

No.	Item Statement		Mean	Std. Deviation	Percentage (%)
1	As a doctor, which information tool do you recommend to a patient to look for health information?	Health professional (doctors/ nurses/ pharmacist)	4.60	0.804	1 (SD) 3 (D) 5 (NS) 17 (A) 74 (SA)
		Internet	2.84	1.316	9 (SD) 49 (D) 10 (NS) 13 (A) 19 (SA)
		Disease focused group	3.08	1.433	7 (SD) 48 (D) 4 (NS) 12 (A) 29 (SA)
		TV, radio, newspapers, magazines	2.63	1.548	28 (SD) 37 (D) 2 (NS) 10 (A) 23 (SA)
		Insurance company	1.33	0.900	85 (SD) 6 (D) 2 (NS) 5 (A) 2 (SA)
		Family and friends	2.04	0.909	20 (SD) 69 (D) 4 (NS) 1 (A) 6 (SA)
2	You always provide the opportunity for the patient to discuss their health and treatment choices.		4.09	1.136	1 (SD) 0 (D) 6 (NS) 48 (A) 45 (SA)
3	You always give enough information to your patient about treatment and referral (drugs, referral options)		4.09	.701	0 (SD) 0 (D) 12 (NS) 56 (A) 32 (SA)
4	You are giving enough consultation		2.82	1.250	3 (SD) 9 (D) 23 (NS)

	time even in an overcrowded clinic.			48 (A) 17 (SA)

Table 10. Descriptive Analysis for Items Measuring Access for Doctors

Table 10 showed that most respondents among doctors recommended their patients to seek medical information from health professionals. They agreed that enough opportunities, information and time were given to patients during consultation sessions.

iii. Administrators

No.	Item Statement	Mean	Std. Deviation	Percentage (%)
1	The ministry or hospital policy encourages patient engagement in planning any advertisement or providing any source of information.	4.00	1.118	4 (SD) 4 (D) 12 (NS) 50 (A) 30 (SA)
2	The ministry/ hospital policy encourages patients to be involved completely in their treatment decisions.	4.11	1.167	0 (SD) 4 (D) 16 (NS) 26 (A) 54 (SA)
3	The ministry/ hospital policy allows full disclosure of patients' medical healthcare information.	4.00	1.225	0 (SD) 8 (D) 12 (NS) 40 (A) 40 (SA)

Table 11. Descriptive Analysis for Items Measuring Access for Administrators

Table 11 showed that most administrator respondents agreed that the Ministry of Health (MoH) or hospital policymakers have encourages patient engagement by promoting involvement in treatments and enhancing doctors' understanding of patients' histories.

D. Commitment

Commitment attributes were measured using a similar measurement scale consisting of 8 items for patients, and 5 items for both doctors and administrators. Table 12, 13, and 14 show the mean and standard deviation of each itemrated by patients, doctors, and administrators respondents respectively.

No.	Item Statement	Mean	Std. Deviation	Percentage (%)
1	The doctors listen to the expectation of my health care all the time regardless of the circumstances	3.82	.747	0 (SD) 2 (D) 19 (NS) 53 (A) 26 (SA)
2	You are encouraged to ask questions.	3.73	.939	1 (SD) 5 (D) 19 (NS) 41 (A) 34 (SA)
3	You are treated with dignity and respect.	4.07	.863	1 (SD) 2 (D) 8 (NS) 50 (A) 39 (SA)
4	You trust the health practitioner enough to tell them personal things.	3.44	1.216	8 (SD) 11 (D) 24 (NS) 35 (A) 22 (SA)
5	You felt that the doctor interested in understanding you as a person and not just your illness	3.07	1.074	9 (SD) 16 (D) 31 (NS) 28 (A) 16 (SA)
6	Your opinions were taken seriously by the health practitioner.	3.60	.915	2 (SD) 5 (D) 23 (NS) 46 (A) 24 (SA)
7	The doctor is concerned about how your illnesses affect your everyday life, family, and yourself.	3.82	1.051	4 (SD) 8 (D) 16 (NS) 42 (A) 30 (SA)
8	Your health practitioner allows you to consult them anytime even after their working hours.	2.89	1.283	15 (SD) 16 (D) 30 (NS) 27 (A) 12 (SA)

Table 12. Descriptive Analysis for Items Measuring Commitment for Patients

Table 12 showed the agreement of patient respondents regarding good compassion, respect, integrity, concern, and availability received by health professionals. However, most respondents were unsure if their health professionals were interested in understanding them as a person, rather than treating them solely as a patient.

No.	Item Statement	Mean	Std. Deviation	Percentage (%)
1	You listen carefully to	3.82	.751	0 (SD) 1 (D)

	your patient regardless of the patients' behavior and circumstances.			9 (NS) 63 (A) 27 (SA)
2	You encouraged your patient to ask questions and give opinions on their treatment choices.	4.09	.701	0 (SD) 0 (D) 7 (NS) 58 (A) 35 (SA)
3	You always understand your patient's needs.	3.82	.751	0 (SD) 3 (D) 19 (NS) 55 (A) 23 (SA)
4	You care about your patient's illnesses may affect everyday life and family.	4.27	.467	0 (SD) 0 (D) 1 (NS) 60 (A) 39 (SA)
5	You are always earnest when listening to your patient's problem.	4.18	.603	0 (SD) 0 (D) 9 (NS) 54 (A) 37 (SA)

Table 13. Descriptive Analysis for Items Measuring Commitment for Doctors

Table 13 showed that most respondents agreed to have shown a commitment value towards their patients. The commitment value was measured by the level of attention, two-way communication, opinion validation, understanding, and care given to their patients.

No.	Item Statement	Mean	Std. Deviation	Percentage (%)
1	The ministry/ hospital includes patient's opinions in the implementation of patient engagement in the healthcare system.	3.56	1.590	2 (SD) 6 (D) 14 (NS) 46 (A) 32 (SA)
2	Meetings/ town hall session with patients is routinely performed in encouraging patient engagement.	3.78	1.641	4 (SD) 8 (D) 16 (NS) 38 (A) 34 (SA)
3	The Standard Operating Procedure (SOP) includes a specific component of patient engagement implementation.	4.00	1.414	2 (SD) 4 (D) 18 (NS) 32 (A) 44 (SA)
4	The ministry/ hospital supports an online medical record system for patients' access.	4.00	1.581	4 (SD) 6 (D) 8 (NS) 30 (A) 52 (SA)
5	The ministry/ hospital is willing to provide funding for an online medical record system for patients' access.	3.44	1.740	6 (SD) 6 (D) 20 (NS) 34 (A) 34 (SA)

Table 14. Descriptive Analysis for Items Measuring Commitment for Administrators

Table 14 showed that most administrator respondents agreed that MoH or hospital policies valued patients' opinions. They also agreed that regular sessions and SOP were held and practiced respectively to encourage patient engagement. Patients were provided access to an online medical record system. Funding will be provided for the purpose.

E. Therapeutic Alliances

The final attribute proposed by Higgins et al was therapeutic alliances. The number of constructed items for patients, doctors, and administrators was 6, 5, and 3 respectively. Table 15, 16, and 17 show the mean and standard deviation of each item rated by patients, doctors, and administrators respondents respectively.

No.	Item Statement	Mean	Std. Deviation	Percentage (%)
1	Both health practitioners and you are involved in care to the degree that is expected.	3.91	.874	0 (SD) 3 (D) 13 (NS) 53 (A) 31 (SA)
2	The doctor helps you to understand when a choice is required and what the choice options are.	4.02	.723	0 (SD) 0 (D) 17 (NS) 50 (A) 33 (SA)
3	The doctor gives you the time to make choices and the opportunity to express your opinions about your treatments.	4.00	.769	0 (SD) 2 (D) 18 (NS) 50 (A) 30 (SA)

4	The doctor listens to your concerns about the pros and cons of the treatment options.	4.04	.601	0 (SD) 0 (D) 15 (NS) 57 (A) 28 (SA)
5	You are provided opportunities to review and revisit decisions.	3.87	.991	2 (SD) 4 (D) 21 (NS) 45 (A) 28 (SA)
6	Your doctor acknowledges that the patient has the final choice regarding tests and treatment.	3.96	.737	0 (SD) 2 (D) 15 (NS) 53 (A) 30 (SA)

Table 15. Descriptive Analysis for Items Measuring Therapeutic Alliances for Patients

Table 15 showed the level of therapeutic alliances between patients and health professionals from patients' perspectives. Overall, respondents agreed that the involvements from both parties were as expected. Most respondents were confident that their health professionals provided ample help, consideration, and boundaries of rights (that they have the final say about their treatment).

No.	Item Statement	Mean	Std. Deviation	Percentage (%)
1	You are involved with the care of your patient to the degree than expected.	3.73	.647	0 (SD) 1 (D) 14 (NS) 60 (A) 25 (SA)
2	You help a patient to understand the choices that they have.	4.27	.467	0 (SD) 0 (D) 4 (NS) 61 (A) 35 (SA)
3	You listen to the patient's concerns about the pros and cons of the treatment option.	4.09	.539	0 (SD) 0 (D) 6 (NS) 59 (A) 35 (SA)
4	You allow a patient to review and revisit their decision	3.73	.905	0 (SD) 1 (D) 6 (NS) 56 (A) 37 (SA)
5	You acknowledge that the patient has the final choice regarding test and treatment options.	4.18	.982	0 (SD) 1 (D) 2 (NS) 46 (A) 51 (SA)

Table 16. Descriptive Analysis for Items Measuring Therapeutic Alliances for Doctors

Table 16 showed the level of therapeutic alliances between patients and health professionals from doctors' perspectives. Overall, respondents agreed that the involvements from both parties were as expected. Most respondents were confident that they have provided ample help, consideration, and boundaries of rights with their patients.

No.	Item Statement	Mean	Std. Deviation	Percentage (%)
1	The ministry/ hospital plays routinely performed an audit in ensuring patient engagement was a success.	4.00	1.323	2 (SD) 4 (D) 10 (NS) 44 (A) 40 (SA)
2	The ministry/ hospital ensures the patients understand their right to full access to their healthcare information by creating awareness amongst patients about this concept via advertisements, posters, etc.	4.00	1.581	2 (SD) 6 (D) 8 (NS) 38 (A) 46 (SA)
3	The ministry/ hospital strongly promotes this concept by always emphasizing the need to involve patients in their final treatment decisions through meeting sessions and reminders to doctors.	3.89	1.537	2 (SD) 4 (D) 10 (NS) 44 (A) 40 (SA)

Table 17. Descriptive Analysis for Items Measuring Therapeutic Alliances for Administrators

Table 17 showed the level of therapeutic alliances between patients and health professionals from administrators' perspectives. Overall, respondents agreed that they have performed routine audits, ensured patients' full access to their healthcare, and constantly reminded the public and health professionals regarding the patients' rights.

CONCLUSION AND RECOMMENDATION

The results obtained through the use of structured questionnaire sets have contributed to a better understanding of the characteristics associated with patients' participation in a multiracial society. The added value of this work is for both researchers and practitioners, such as healthcare system developers, policymakers, healthcare providers, and patients, who can use the findings as a springboard to propel the development and implementation of patient engagement. It is strongly advised for future research that includes item scoring, model development, and quantitative and qualitative analysis. Further research should assess the relationship between patient engagement with patients' biological markers of disease. The research should be large-scale research to offer robust evidence suggesting that characteristics of interventions can also affect patient engagement and associated behaviors of patients. Next, a comparative effectiveness trial can also be conducted to study how cost-effectiveness in healthcare and patients' productivity rate may influence patient engagement. Finally, a cross-sectional study can also be proposed to measure the effectiveness of technology-integration using the Interactive Care Model in promoting patient engagement in clinical practices.

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