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DO PATIENTS WANT TO BE INFORMED AND BE INVOLVED IN DECISION-MAKING?

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This study attempts to examine patients' needs for information and whether they want to participate in decision-making during clinical consultations. An empirical study was carried out in the context of a Malaysian health care setting involving 108 diabetic patients from a public hospital. Although most of the patients prefer more information, they do not want to be involved in decision-making. The needs and desires for information, especially, amongst patients with lower education levels were not manifested in their information-seeking behaviors during actual interactions with their doctors. Doctors, on the other hand, could have misperceived their preferences for information.

INTRODUCTION

Informing patients is arguably doctors' most important communicative responsibilities. For the patient, information fosters an understanding of one's health status that may help to reduce uncertainty, alleviate concerns and improve health, while medical information is also crucial for the doctor to formulate a diagnosis and prescribe treatment. Patients are not passive 'consumers' who are unable to contribute any input into the care they receive. Instead, patients generally have valuable knowledge about their symptoms and health circumstances as well as preferences about the kind of treatment they would require. All these can be very useful for doctors in the decision-making process. They also have desires to learn more about their conditions and treatments, which

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if fulfilled, would have positive contributions to self-care and health outcomes.

Information and exchange of information between doctors and their patients are key to excellent health provision. 'Communication between doctors and patients is as important as a doctor's ability to diagnose' said S. Radhakrishnan, the Honorary Secretary of Asean Law Association of Malaysia (*The Star,* 16 June 2004).

The aim of this study is to examine patients' needs and desires for information during doctor-patient interactions. To what extent does the doctor misperceive how much relevant medical information the patient actually needs before a critical decision on treatment is decided on? The question is how much information does the patient actually want and how different is the doctor's perceptions of the patient's desire for information as reflected in the manner by which information is transmitted to the patient? It may be believed that the choice of treatment is completely left to the doctor but if this is true, there is no assurance that the treatment chosen would be the one that is preferred by the patient.

It is important for the doctor to provide the patient with relevant medical information in order to allow the patient to participate in deciding the choice of treatment. On the other hand, the patient may want to be informed but it does not always mean that he or she wants to participate in decision-making.

An exploratory study was carried out in a public hospital of a Malaysian health care setting. It only focuses on diabetic patients. Diabetes is a life-long medical problem and is mainly a self-managed disease. With close consultation between patients and doctors, effective treatment can be achieved through information dissemination resulting in greater awareness and improved patient education. The disease can thus be better controlled and patients can lead a better quality of life. Embong's (1990) study showed that in the treatment for diabetes, educating patients and giving them information are crucial but are mostly neglected in Malaysia. The treatment of diabetes thus provides an appropriate setting for this study where much of the success in treatment depends on overcoming the information asymmetry problem.

Patients' Satisfaction and Information

A patient's satisfaction may be important not only in the economic aspect; that is the utility that the patient obtains, but also its influence on other medical aspects such as treatment compliance, health status and medical outcomes. Satisfied patients are more likely to comply with the medical treatment prescribed, more likely to provide relevant medical information to their doctors and more likely to continue using the medical services (Hall et al., 1988; Simpson et al., 1991; Aharony & Strasser, 1993). Patient satisfaction, positive outcomes and patient loyalty to the doctor are all related to the quality of communication during their encounters (Stewart, 1995; Kaplan et al., 1996; Levinson et al., 1997). On the other hand, some studies such as those by Grol et al. (1990) and Ford et al. (1996) have proven that patients' non-compliance and dissatisfaction were due to failure on the part of doctors in providing adequate information and explanation. Other studies that show positive correlation between information provision by doctors and patients' satisfaction are those by Baker (1990), Steptoe et al. (1991), Williams and Calnan (1991), and Krupat et al. (2000).

Information Provision and Decision-Making

For the past two decades, many studies in health care have given emphasis to the provision of information by doctors so that patients are well informed to make their own medical decisions. Most of the research in these areas has been conducted in the western countries. On the other hand, the paternalistic patient-doctor relationship is still evident in developing and under-developed nations where the doctor directs care and makes decisions about treatment (Andaleeb, 2001; Simpson, 1999). But in the western world this approach has been slowly replaced by 'shared decision-making' (Beisecker & Beisecker, 1990; Clark et al., 1991; Deber, 1994a; Deber, 1994b; Coulter et al., 1999; Braddock et al., 1999; Barry, 1999). As Coulter et al. (1999) noted, assumptions that doctors know best, such as making decisions on behalf of patients without involving them, should have no place in modern health care.

In order for the patient to make his own medical decisions, his doctor has to be able to transfer the technical or scientific knowledge to him in a clear and unbiased way (Gafni et al., 1998). A patient's involvement in decision-making can take the form of voicing of preferences and expectations or voicing of responses to the doctor decisions and actions. Lack of this involvement and participation lead to misunderstandings that have actual or potential adverse consequences on taking medicine (Britten et al., 2000). Lutfey and Wishner (1999) also found that patients who are more actively involved and participated in their own care to be more compliant.

Other studies indicate that even though patients may want to be informed but they may not want to be involved in making medical decisions. Decision-making on medical care involves risk. The outcomes in terms of health conditions could be adverse and result in disutility to the patient. Besides the 'consequences' disutility associated with adverse health outcomes, there is also a 'process' disutility associated with having to make decisions where the possibility of adverse outcomes is high (McGuire et al., 1992). But the unique feature of medical care allows patients to default on decision-making and pass the responsibilities to their doctors.

In an uncertain state, and given uncertain outcomes, a patient may demand that the doctor acts as a decision-making agent. The patient may do this because of the fear of getting it wrong and then having to bear the burden of knowing he made a wrong choice. Deber (1994a) reviewed the literature about the extent to which patients want to be informed and also the barriers to participation in decision-making. It was noted that patients often wanted to be informed for a variety of reasons, such as facilitate compliance with treatment. But only 10 percent of the patients played an active role in decision-making. Beisecker and Beisecker (1990) supported this argument in their study on information seeking behavior where most of the patients regarded their doctors as the appropriate person to make medical decisions.

Similarly, the study by Blanchard et al. (1988) on information and decision-making preferences of cancer patients revealed that 92 percent of the patients preferred all information including bad news to be given. About 25 percent of the patients who wanted all information preferred to leave decision-making on treatments to their doctors. This clearly suggests that the preference for information does not always mean that the patient then wants to participate in decision-making. An empirical study by Scott and Vick (1999) also concluded that to be involved in medical decision-making had no influence on the choice of visits to the doctors. On the other hand, studies by Wade (1995) and Stiggebout and Kiebert (1997) showed that transferring the responsibility of decision-making to their doctors does not alter the patients' need for information.

Extent of Information Transfer

Patients' communicative styles, information-seeking behaviors as well as their socio-economic characteristics were found to be the main factors that determined the extent of information transfer during consultation. These factors caused the difference in the amount of information given to different groups of patients. Hall et al. (1988) found that more than half of patients' contributions to the interactions consist of information-giving but much of these occur in response to questions asked by their doctors. The same study also revealed that only 6 percent of the interaction involves patients' question-asking. Study on patient's information seeking behavior by Beisecker and Beisecker (1990) also revealed the same result. Their study showed that patients' desired information about a wide range of medical topics but they showed little effort to elicit the information during the actual interaction with their doctor. Patients should take responsibility for asking questions and most of the doctors will be happy to answer the question posted to them during consultation (Charles et al., 1997; Stevenson et al., 2000).

More-educated patients tend to receive more information especially on treatment and diagnosis as compared to their counterparts with a lower level of educational attainment (Pendleton & Bochner, 1980; Stewart, 1983; Street, 1991). But Waitzkin (1984) found no difference between poorly-educated, lower class patients and better-educated upper class patients in their self rating of desire for information. However, during doctor-patient encounters, lower-class patients asked fewer questions, so doctors assumed that they had little desire for information. The poorly-educated patients generally have communication problems such as inability to describe their symptoms and fears, and inability to understand their doctors' instructions and explanations (Waitzkin, 1985). They too, are usually not aware of their rights to know and are reluctant to question doctors whom they perceive as socially more superior and wiser (Quah, 1989).

In general, doctors give more information to female than to male patients. Waitzkin (1984) discovered that women patients asked more questions and engaged in more interaction with their doctors during clinical consultations. A meta-analysis study on provider behaviors in medical encounters by Hall et al. (1988) found that in general, female patients received more information and more total communication than the male patients. In the same analysis, they also discovered that in most studies, more information was given to younger patients. Female and younger patients were found to engage in more communication with their providers and this could also be the reason why greater information was transmitted to them. Other studies that found similar relationship between gender and information transmission are those by Stewart (1983), Hooper et al. (1982) and Verbrugge and Steiner (1981).

Doctors also tend to give more information to patients with serious illnesses (Pendleton & Bochner, 1980). Patients with chronic diseases were reported wanting more information than those with tumors (Kirsner & Fedeman, 1997). The desire for information on diagnosis, prognosis and treatment is particularly great among cancer patients (Steptoe et al., 1991; Jones & Pearson, 1999).

Studies also showed that the extent of information given by doctors might vary depending on the specific topic being discussed. The type of information can be divided into information in general, diagnostic-health information, treatment and procedural (Street, 1991). The same study also indicated that the frequency of patients' question-asking had a strong relationship with the degree of medical information in general, diagnostic and treatment provided by doctors.

One way of looking at the transmission of information is simply the amount of time devoted to the process. Waitzkin (1984) found that doctors spent very little time giving information to their patients. On the average, only a little more than a minute in encounters lasting about 20 minutes was spent in information giving. On the other hand, given adequate time in the interaction, it is not surprising that patients may ask more questions.

METHODS

Observations

All the respondents were categorized into three groups based on the extent of information transfer that occurred when they interacted with their doctors. The extent of information transfer was classified into three levels, and was coded as group 1, 2 or 3. Patients categorized under group 1 obtained more information from the doctor compared to those in group 2, whereas patients categorized under group 3 obtained the least information. This categorization process was carried out using a direct observation method adapted from the Katz' Resource Exchange Analysis (REA) system. This system was originally developed by Longabaugh (1963) but applied to analyze the consultation in general practice by Katz et al. (1967). It allows flexibility in defining the 'resources' to suit the objective of the study. As the focus of this study was on the amount and types of information given by the doctor during consultation, the 'resources' in this contact was defined in general as the 'type of information'. There are three types of information taken into consideration in the observation; information about illness, information about diagnosis and information about treatment.

The REA classifies doctor-patient interaction in terms of modes of exchange and content. The modes of exchange were in the form of question-asking or information-giving initiated either by the doctor or the patient. Each utterance was assigned one content code and one mode of exchange.

The aim was only to categorize the respondents into three groups based on the amount of information transferred, therefore stringent procedures of transcribing and coding were not strictly observed. One of the setbacks was no distinct demarcations were assigned to define these three different groups of patients. There were also other limitations that were not accounted for in the categorization process. For example, this process was carried out based on the extent of information transfer observed during that particular visit only. What the patient might have learned from his or her previous visits to the doctor was not taken into account. Another weakness was the Hawthorne effects (Jaya et al., 2001) where the presence of the observer may have influenced the doctor's and patients' behaviors in information exchange.

The sample covers 108 patients with diabetes from a public hospital. The collaboration of a single doctor from that hospital was sought for the opportunity to observe the patient-doctor interaction that went on during consultation. The names of the hospital and the doctor involved were removed to ensure confidentiality. An effort was made to avoid inter-interpreter bias by using a single person, the author, to observe and record all the consultation. Patients were identified with the help of the hospital staff in charge. The patients had to undergo blood-sugar test before seeing the doctor. Their files were identified by the hospital staff in charge and handed over to two research assistants, both employed and trained to help in guiding the respondents to answer the questionnaire. The help of these research assistants was important because they could communicate well in the local dialect. Verbal consents were obtained from the identified diabetic patients, first to answer the questionnaire and second to be observed when they interacted with the doctor. All the patients identified did not object to both the requests made upon them.

The sample was obtained by indirect 'sampling' whereby the randomness in the data can still be preserved. Let us say there are $i = 1, 2 \ldots N$ diabetic patients in a particular hospital. It is assumed that they are distributed over blocks of five days according to some distribution such as characteristics of patients. As the hospital does not introduce any bias such as assigning males on certain days and females on other days, or Malays on Mondays and Wednesdays, Chinese on Tuesdays and Thursdays, and so on, the sample of one of the five days can be taken as a random sample. The characteristic distribution on any of the five days is representative of the overall distribution of the population characteristics.

Specification of Model

Since the dependent variable in this study is in ordinal form, the model can be specified based on what is known as the ordered logit models. There are a few types of ordered logit models but the most commonly employed is the proportional odds model which uses cumulative logits (Agresti, 1990; Liao, 1994). The cumulative logit model also allows the mixing of variable types, such as continuous and categorical, for the independent variables (Agresti, 1990).

Like logistic regression, ordered logit uses maximum likelihood methods, and finds the best set of regression coefficients to predict values of the logit-transformed probability that the dependent variable falls into one category rather than another. The specification of the ordered logit could be expressed in either logit or probability forms but the original model is built around a latent regression as follows:

$$y^* = \sum_{i=1}^{m} \beta_i x_i + \varepsilon$$

where y* is the unobserved latent variable.

What is observed is the following:

$$\begin{array}{lll}
y = 1 & \text{if} & y^* \leq \alpha_1 \\
y = 2 & \text{if} & \alpha_1 < y^* \leq \alpha_1 \\
y = 3 & \text{if} & \alpha_2 < y^* \leq \alpha_3 \\
 & \cdots & \\
 & \cdots & \\
 & \cdots & \\
y = k\text{-}1 & \text{if} & \alpha_{k-2} < y^* \leq \alpha_{k-1} \\
y = k & \text{if} & \alpha_{k-1} < y^*
\end{array}$$

y is observed in k number of ordered categories and α_s are unknown threshold parameters separating the adjacent categories to be estimated with β_s.

The dependent variable, y, in this study has the values $k = 1, 2$ and 3. So there are only two cutoff values α_1 to α_2. The proportional odds model is based on the cumulative distribution probabilities of the response categories rather than the individual probabilities.

The proportional odds model is as follows:

$$L_j(x) = \text{logit}[P(y \leq j \mid x)] = \log \frac{P\langle y \leq j \mid x \rangle}{P\langle y > j \mid x \rangle} = \alpha_j + \beta' x$$

$j = 1$, k-1

α_1 to α_2 can differ but β's (slopes) are constant. Two equations will be estimated. The equations are:

Equation 1: $\log \dfrac{P\langle y=1|x\rangle}{P\langle y=2and3|x\rangle} = \alpha_1 + \beta' x$

Equation 2: $\log \dfrac{P\langle y=1and2|x\rangle}{P\langle y=3|x\rangle} = \alpha_2 + \beta' x$

The comparisons between the pooled categories of the dependent variable can be seen as:

	Pooled categories	compared to	Pooled categories
Equation 1:	1		2 and 3
Equation 2:	1 and 2		3

Each equation models the odds of being in the set of categories on the left versus the set of categories on the right. The equations suggest that the effects of independent variables (one unit change in the x's) would induce changes in the odds of patients being categorized under group 1 instead of 2 or 3, or group 1 or 2 instead of 3, by the factor of exp(β).

The predicted cumulative probabilities at a certain level of independent variables can be calculated using the following formulae.

$$\frac{P\langle y=1|x\rangle}{P\langle y=2and3|x\rangle} = \frac{e^{\alpha_1+\beta' x}}{1+e^{\alpha_1+\beta' x}}$$

and

$$\frac{P\langle y=1and2|x\rangle}{P\langle y=3|x\rangle} = \frac{e^{\alpha_2+\beta' x}}{1+e^{\alpha_2+\beta' x}}$$

Thus the predicted probabilities for y = 1, 2 or 3 will be:

$$P(y=1) = \frac{e^{\alpha_1+\beta' x}}{1+e^{\alpha_1+\beta' x}}$$

$$P(y=2) = \frac{e^{\alpha_2+\beta' x}}{1+e^{\alpha_2+\beta' x}} - \frac{e^{\alpha_1+\beta' x}}{1+e^{\alpha_1+\beta' x}}$$

$$P(y=3) = 1 - \frac{e^{\alpha_2+\beta' x}}{1+e^{\alpha_2+\beta' x}}$$

FINDINGS

Four different forms of doctor-patient interactions were considered when examining the extent of information transfer during consultation. These are the authoritative, paternalistic, shared and informed models (for different doctor-patient interaction models refer to: Emanuel & Emanuel, 1992; Stone & Mantese, 1999; Charles et al., 1999). However, all the observations carried out in the public hospital could only be categorized as the paternalistic model. This outcome is not unusual because only one doctor took part in this study. Therefore, not many variations in the doctor's behavior can be observed during clinical consultation. The extent of information transfer that occurs when the doctor and patient interact should then depend on the information-seeking behavior and other related factors of the patient.

Although all the observations made during clinical consultation were categorized into only the paternalistic form, there were still some significant differences in the amount of information transfer that could be observed within the same category. The extent of information transfer is categorized into three groups. This categorization process was based on the direct observation method adopted from the Katz' REA system. Table 1 shows the categorization of the doctor and patient interaction during consultation. Less than 15 percent of the respondents were classified under group 1. About 40 percent of the respondents were categorized under group 2 and the rest were in group 3.

Table 1: The Extent of Information Transfer

Group	Frequency	Percentage	Mean
1. More information transferred	13	12.0	
2. Average amount of information transferred	44	40.8	
3. Least information transferred	51	47.2	
Total	108	100.0	2.45

The independent variables considered as shown in Table 2 were factors that might influence the extent of information transfer when the doctor and patient interact. Most of the variables were associated with the socio-economic profiles and related medical conditions of the respondents. These variables were chosen based on the non-economic literature which indicated that respondents from a higher socio-economic status are more active in seeking information.

Table 2: Frequency (Percentage) and Mean Values

Variables	Coding	
Age (AGE) (in years)		56.53
Occupation (OCCU)		
(1) Home maker/ retired	0	49 (45.4)
(2) Fisherman, small farmer, odd job worker, petty trader	0	14 (14)
(3) Manual worker, factory worker, sales assistant	0	8 (7.4)
(4) General services worker, general office administrator, technician, teacher, nurse	1	27 (25)
(5) Businessman, merchant, wholesaler	1	4 (3.7)
(6) Private and government sectors executive and professional	1	6 (5.6)
Education level (EDU)		
(1) Below primary	0	21 (19.4)
(2) Primary	0	36 (33.3)
(3) Secondary up to form 5	1	27 (25)
(4) Form 6/certificate/diploma	1	10 (9.3)
(5) Degree/professional qualification	1	14 (13)
Race (RACE)		
(1) Malay	0	93 (86.1)
(2) Chinese	1	15 (13.9)
(3) Others	-	-
Gender (GENDER)		
(1) Male	0	50 (46.3)
(2) Female	1	58 (53.7)
Years suffering from diabetes (YEAR) (in years)		7.31
Uncontrolled/controlled* (CONT)		
(1) Uncontrolled	0	46 (42.6)
(2) Controlled	1	62 (57.4)
Consultation time (TIME)(in minutes)		7.81
Other sources of information (INFORSOU)		
(1) No	0	39 (36.1)
(2) Yes	1	69 (63.9)

Note: Mean values are given for continuous variables. Frequency and percentage in parentheses are provided for the rest of the variables.
* Uncontrolled if the amount of glucose in the blood is at 6.8 mol/L or more with fasting and 8 mmol/L or more without fasting.

Severity of the patients illness were represented by the number of years patients have suffered from diabetes (YEAR) and also whether their blood sugar levels were controlled or uncontrolled (CONT). Another possible factor that can represent patients' information seeking behavior is INFORSOU which indicate whether patients bother to seek information from other sources. Patients who try to seek information from other sources may show that they are actively searching for more information regarding their illness. They will possibly try to get more information from their doctors as well.

The Estimated Models

Two forms of models were estimated. The first type which is the main-effects model includes only the independent variables given in Table 2. The second one involves all the independent variables in the first model together with the interaction terms. The interaction terms considered were GENDER*EDU, GENDER*AGE, RACE*EDU, CONT*EDU, RACE*AGE, EDU*INFORSOU and RACE*INFORSOU.

Variables EDU and OCCU are highly correlated (correlation coefficient is 0.74). As a result, two separate sets of equations were estimated for the model without interaction terms. The first set was estimated based on all the variables given in Table 2 except for variable OCCU and the second involves all the variables excluding EDU. The data for variables EDU were collapsed into only two levels. Respondents with below primary and primary education were grouped into one level that represents low education and given code 0, the rest were given code 1. The same process was carried out in collapsing the data for variables OCCU where respondents from occupation levels 1, 2 and 3 (as shown in Table 2) were grouped into one level that represents 'lower income group' which was given code 0 and the rest were given code 1.

The Wald statistic was used to test the significance of individual logistic regression coefficient for each independent variable. Models 1, 2 and 3 represent models that have significant estimated coefficients for the independent variables with p-values less than 0.05. (All the coefficients estimated in Models 1 and 2 have p-values less than 0.05 except for variable RACE in Model 1 that has p-value estimated at 0.08).

Models 1 and 2 are represented by the following two sets of equations without interaction terms are:

Model 1:
Logit (p1) = -5.34*INTERCP1 – 0.29*TIME – 1.43*EDU – 0.93*RACE
Logit (p2) = -2.79*INTERCP2 – 0.29*TIME – 1.43*EDU – 0.93*RACE

and

Model 2:
Logit (p1) = -5.96*INTERCP1 – 0.34*TIME – 1.80*OCCU – 1.37*RACE
Logit (p2) = -3.32*INTERCP2 – 0.34*TIME – 1.80*OCCU – 1.37*RACE

Both the parsimonious models without interaction terms do not have much significant difference statistically, especially in terms of their coefficients' signs and significance levels. The chi-square scores for the proportional odds assumption test were at 5.02 and 7.04 which are not significant with respect to chi-square distribution with 3 degrees of freedom ($p = 0.17$ and 0.07 respectively) for both the models without interaction terms. The null hypotheses for the proportional odds test were accepted, suggesting that the effects of the covariates should be constant regardless of the levels of the dependent variable. These imply that the proportional odds model sufficiently fits the data. Based on the same interpretation the results for the model with interaction terms also indicated that the proportional odds model fits the data well.

The likelihood ratio [LR = –2 (LOG L0 (restricted model) – Log L1 (unrestricted model)] test showed that the combined effects of the independent variables TIME, EDU and RACE for the first and TIME, OCCU and RACE for the second model were significant with p-values less than 0.01. The Akaike Information Criterion (AIC) results for the models without and with interaction terms implied that the latter model was a better model. As for the likelihood ratio test statistic, all the three models indicated significant ($p<0.01$) combined effects of covariates on the dependent variable.

Marginal Effects

The marginal effects of the independent variables on the dependent variable can be interpreted based on the values of odds ratio. Interpreting the marginal effects of the independent variable using percentage change in the odds (Demaris, 1992) indicates that a one minute increase in TIME in Model 1 reduces the odds of being classified under group 2 or 3 versus group 1 (or group 3 versus group 2 or 1) by 25 percent, that is, 100(0.75–1) = -25%. This outcome is expected as when consultation time is longer, the patient may ask more questions and the doctor could impart more information. Similar interpretations can be applied for variable TIME in the second and third models.

Educational level of a patient could influence the extent of information transfer when the patient interacts with the doctor. Results interpreted in percentage indicate that the odds of patients to be categorized under group 2 or 3 versus group 1 (or group 3 instead of 2 or 1) would be reduced by 76 percent [100(0.24–1) = -76%] for patient with higher educational levels. The same interpretation implies that patients' occupational levels produce similar impacts on their information-seeking behaviors.

These outcomes indicate that education and occupational levels of patients are among the important factors that influence their information seeking behaviors. Past studies showed that physicians were more likely to justify their choice of treatment to patients with higher education or social status who usually attempt to seek more information (Stewart, 1983; Waitzkin, 1984; Quah, 1989; Street, 1991).

When the field observations were made at the public hospital over a two week period, there was no Indian patient. Eighty-six percent of the patients were Malays and 14 percent were Chinese. Malay and Chinese respondents were coded as 0 and 1 respectively. The outcome indicates that the odds for Chinese patients to be categorized under groups 2 and 3 instead of level 1 (or group 3 instead of group 2 or 1) would reduce by about 60 percent compared to those for Malay patients. However, the estimated coefficient for variable RACE in Model 1 has a p-value of 0.08 that can only be accepted at 10 percent level of significance.

Doctors tend to give more information to patients with serious illnesses and patients with serious illnesses were found to seek more information from their doctors (Pendleton & Bochner, 1980; Kirsner and Fedeman, 1997). However, YEAR and CONT that represent severity of illness were both found to have no significant influence on information transmission during doctor-patient interactions. Other variables such as AGE, GENDER and INFORSOU were also found to have no significant effect on the dependent variable.

Model 3 with the interaction terms can be expressed as:

Model 3:

$$\text{Logit }(p1) = -5.11*\text{INTERCP1} - 0.32*\text{TIME} - 1.45*\text{EDU} + (5.45 - 0.08*\text{AGE})\text{GENDER}$$

$$\text{Logit }(p2) = -2.43*\text{INTERCP2} - 0.32*\text{TIME} - 1.45*\text{EDU} + (5.45 - 0.08*\text{AGE})\text{GENDER}$$

The interaction term, AGE*GENDER, indicated that older women patients seemed to get more medical information from their doctor. The interaction term shows that the effect of one factor will vary at different level of another factor. The effect of an interaction term can be interpreted as the partial effect of one independent variable on another independent variable (Demaris, 1992).

The above models show the partial effects of patient's gender expressed as a function of patient's age. For example, the partial effects for female patients at age 40 on the log odds for being categorized under group 3 instead of group 1 or 2 (group 2 or 3 instead of 1) would be 5.45–0.08(40) = 2.25. On the other hand, for older female patients (for example, age 50 years) the partial effects expressed in log odds would be 5.45–0.08(50) = 1.45. Thus, it can be generally interpreted that there will be higher chances for female patients at age 40 to be categorized under group 3 instead of group 1 or 2 (group 2 or 3 instead of 1) compared to female patients at age 50.

The model with interaction terms also indicated that male patients seemed to get more information from the doctor compared to female patients. These outcomes contradict to the findings of some non-economic literature which showed that female patients seemed to ask more questions and engaged in more communication than men when they interacted with their doctors.

Predicted Probabilities

Calculating the predicted probabilities is more informative than to directly interpret the marginal effects of the explanatory variables on the odds. A more detailed picture is obtained of the effects of a particular explanatory variable on the event probabilities. Table 3a presents the predicted probabilities for the extent of information transfer (y) by the consultation time (for the first estimated model without interaction terms) assuming other independent variables are valued at their means. The consultation time is a continuous variable with a minimum value of 4 minutes and a maximum value of 16 minutes. The predicted probabilities were computed based on an interval of 4 minutes.

Table 3a: Predicted Probabilities of the Extent of Information Transfer (y) by Consultation Time

Consultation time	Prob (y = 3)	Prob (y = 2)	Prob (y = 1)
4 minutes	0.69	0.28	0.03
8 minutes	0.41	0.49	0.10
12 minutes	0.18	0.56	0.26
16 minutes	0.06	0.42	0.52

The results show that as the time spent during consultation increases the extent of information transfer when patients interact with their doctors also increases. The predicted probability to be classified under group 3 was 0.69 when the doctor spent only 4 minutes with patients. As the consultation time increased to the maximum level of 16 minutes, the predicted probability to be classified under Prob (y = 3) decreased to only 0.06. In contrast, the predicted probability for the patients to be categorized under groups 2 and 1 decreased to 0.28 and 0.03 respectively when consultation time was at 4 minutes. As the consultation time increased, shifting occurs, that is out of Prob (y = 3) into Prob (y = 2) and eventually out of Prob (y = 2) into Prob (y = 1).

Table 3b: Predicted Probabilities of the Extent of Information Transfer (y) by Educational Levels

Level of education	Prob (y = 3)	Prob (y = 2)	Prob (y = 1)
0	0.60	0.35	0.05
1	0.44	0.56	0.18

Patients from the lower educational groups have higher probabilities to be classified under group 3. Table 3b revealed that the predicted probability for patients with only primary or lower education level to be classified under group 3 was 0.6. On the other hand, patients with educational levels at secondary and above have higher chances of being classified under group 1 and 2. Similarly, as shown in Table 3c, patients from the lower occupational groups were more likely to be classified under group 3 while those with higher occupational levels have higher chance to be in groups 1 and 2.

Table 3c: Predicted Probabilities of the Extent of Information Transfer (y) by Occupational Levels

Level of occupation	Prob (y = 3)	Prob (y = 2)	Prob (y = 1)
0	0.62	0.34	0.04
1	0.21	0.58	0.21

Table 3d: Predicted Probabilities of the Extent of Information Transfer (y) by Race

Gender	Prob (y = 3)	Prob (y = 2)	Prob (y = 1)
Malay	0.47	0.46	0.07
Chinese	0.22	0.58	0.20

The sample in this study indicated that the Chinese patients tend to obtain more information from their doctors compared to the Malay patients. As shown in Table 3d, it was more likely for the Malay patients to be classified under group 3 while the Chinese under groups 2 and 1.

DISCUSSION

A patient's educational or occupational level was the important factor that influenced the amount of information being transmitted during clinical consultation. The results of this study indicated that an increase in the level of education reduced the probabilities of patients being classified under group 3, the group with the least information received by the patient.

Two implications can be deduced from this outcome. First, lower-educated patients generally have communication problems in relating their health problems. They are also perceived to be unable to fully understand doctors' instructions and explanations. Even though their perceptions of the importance of information given by the doctors were similar to their counterparts, their needs and desires for information were not manifested in the actual interactions with their doctors. This group of patients might not be aware of their right to know and were unwilling to question their doctors whom they usually perceive as socially more superior. Second, the result implies the existence of doctor's misperceptions of patients' needs and desires for information during consultations.

As shown in Table 4a, almost all the patients, regardless of their socio-economic status, actually perceived that information on illness, diagnosis and treatment is important. These data indicate that patients' preferences or expectations were not reflected in their actual demand. Patients with lower educational levels, due to their passive communicative style, might be at a disadvantage because doctors could have misperceived their informational needs and desires. For higher educated patients, on the other hand, they received more information because doctors perceived that they could understand health information better.

One way of detecting the possible doctor's misperception in the patient's needs for information is to look at the difference between patient's expectation and his or her actual experience when interacting with the doctor. As indicated by Lewis (1994), the difference was found to relate significantly to patient satisfaction where the variance may be used to represent the 'amount' of dissatisfaction. For example, Table 4a shows patients' perceptions on the importance of information given by the doctor regarding illness, diagnosis and medication/treatment. These values can be used to represent the expected amount of information transferred during consultation.

Table 4a: Patients' Perceptions on the Importance of Types of Information Provided by the Doctor

Provision of information on	Illness (mean = 4.26)	Diagnosis (mean = 4.22)	Medication/ Treatment (mean = 4.25)
Likert Scale	Frequency (Percent)	Frequency (Percent)	Frequency (Percent)
Disagree	1 (0.9)	2 (1.9)	1 (0.9)
Neither disagree/agree	1 (0.9)	0 (0.0)	0 (0.0)
Agree	74 (68.5)	78 (72.2)	77 (71.3)
Strongly agree	32 (29.6)	28 (25.9)	30 (27.8)

Table 4b shows patients' perception on the types and amount of information transferred during their actual consultation with the doctor. Judging from the figures in Tables 4a and 4b, there obviously is a difference between the expected and the actual amount of information provided during consultation. More than 95 percent of the patients perceived that it was important to get information regarding illness, diagnosis and medication/treatment from their doctors. During their actual encounters, more than 60 percent of them perceived that they were not given any or only given a little of all the three types of information.

Table 4b: Patients' Perceptions on the Types and Amount of Information Provided During Actual Encounters with the Doctor

Provision of information on	Illness (mean = 2.21)	Diagnosis (mean = 1.98)	Medication/ Treatment (mean = 2.28)
Amount of information	Frequency (Percent)	Frequency (Percent)	Frequency (Percent)
No	13 (12.0)	31 (28.7)	9 (8.3)
A little	59 (54.6)	45 (41.7)	59 (54.6)
A lot	36 (33.3)	32 (29.6)	40 (37.0)

It has also been generally perceived that lower educated patients may not be able to understand what they were told. Such a perception may not be true as indicated in Table 4c where almost all the patients who did receive information about diagnosis, illness and treatments from their doctors, whether little or a lot, reported that they could easily understand the explanations.

Table 4c: Whether the Explanations were Clear

Provision of information on	Illness	Diagnosis	Medication/ Treatment
Explanation clear or otherwise	Frequency (Percent)	Frequency (Percent)	Frequency (Percent)
Difficult to understand	1 (1.0)	1 (1.3)	3 (3.0)
Easy to understand	94 (99.0)	76 (98.7)	96 (97.0)

Doctors were expected to be more informative towards patients with more severe illnesses. In this study, severity of illness was represented by whether patients' sugar level was under control or not, and the number of years they have suffered from diabetes. However, these factors were found to have no effect on the information transmitted during the clinical consultations.

Patients simply feel more satisfied and they obtain utility from 'reduced uncertainty' based on the information provided by their doctors (Mooney & Lance, 1993). As shown in this study most of the patients wanted to be informed but they did not retain their autonomy in terms of their capacity to make decisions. They preferred to pass the responsibility of decision-making to their doctors. Making medical decisions usually involves high risk that may result in adverse outcomes. This process may involve disutility in itself. The unique features of products such as medical care allow the patient to gain from being able to 'transfer' the responsibilities of decision-making to the doctor.

As shown in Table 5a, more that 87 percent of the patients still regarded their doctors as the right persons to make medical decisions. Similarly, Table 5b shows that 88.9 percent of the patients perceived that their doctors have made the decisions for them during their actual encounters.

Table 5a: Patients' Perceptions on the Importance of Being Involved in Decision-Making

Likert Scale	Frequency (Percent)
Strongly disagree	1 (0.9)
Disagree	94 (87.0)
Neither disagree/agree	2 (1.9)
Agree	8 (7.4)
Strongly agree	3 (2.8)

Table 5b: Patients' Perceptions Whether They Were Involved in Decision-Making During Actual Encounters with Their Doctors

Description	Frequency (Percent)
Doctor chose treatment	96 (88.9)
Doctor chose considering your opinion	12 (11.1)

CONCLUSION

The prevalence of the paternalistic style of doctor-patient interactions may not be unique to Malaysia. However, this study shows that most of the patients wanted to be fully informed and at the same time preferred to forego the autonomy in medical decision-making. This is a critical issue that has largely not been addressed both by the medical profession as well as policy makers. Although the outcomes cannot be generalized due to the nature and size of the sample, it appears that patients would like more information about the types of medical treatments available. Transmission of such information, however, is constrained by the amount of time available for each interaction as well as by the seemingly compliant nature of patients. Although they prefer more information, they do not make their preferences clear to their doctors during consultations.

Better policies might bring about an urgent need to depart from the paternalistic pattern that appears to dominate interactions in this study. Awareness by doctors about the desire of the less educated for more information about their illness may be helpful in bringing about the reform needed. For this to occur, doctors need training in active listening skills including information about their importance in ensuring more effective interactions. Doctors need to take the lead in ensuring patients are given the opportunity to voice their concerns, and to ask questions relating to their health during consultations. Changes are required, reaching far back into the education syllabus of medical students and support in order to develop a new culture of communication. The government's efforts to improve patient-doctor communication in the Malaysian health care sector have also to face another challenge due to diverse ethnic backgrounds and different languages spoken.

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