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ORIGINAL RESEARCH

The Nexus Between Physician-Patient Communication and Health Outcomes: Level of Patient Communication Satisfaction and Its Impact on Adherence in Ethiopian Comprehensive Specialized Hospitals

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Introduction: This study aims at assessing the level of patient communication satisfaction and its impact on patient adherence among public hospitals in Ethiopia.

Methods: The study employed a cross-sectional design. Data were obtained using Communication Assessment Tool (CAT) and the Adherence to Refills and Medication Scale (ARMS) administered to 381 patients asking them to evaluate satisfaction with physician-patient communication and report their level of adherence respectively. Both descriptive and inferential statistics were computed. Accordingly, the study used correlation, independent samples *t*-test, one-way ANOVA, and linear regression to show causal relationships among factors in physician-patient communication and their effect on adherence.

Results: The findings revealed that the total mean score for communication satisfaction was M = 2.69, showing that the majority of participants were dissatisfied with the physician-patient communication. Further, age and frequency of visits were significantly associated with communication satisfaction, while sex, place of residence, employment, educational level, and marital status failed to produce a systematic effect. The correlation between patient satisfaction with communication scores on the CAT questionnaire was significantly correlated with pharmaceutical adherence (ARMS score) (r = 0.316, p < 0.001), indicating that when patients were satisfied with communication, the level of adherence increased. The regression coefficient also showed that positive relationship was found between communication satisfaction and adherence (b = 1.85, t = 9.759, p < 0.05), indicating that with better quality of communication, the level of adherence also increased.

Conclusion: The majority of participants were found to be dissatisfied with the physician-patient communication. The more satisfied the patient is with communication the better their adherence.

Keywords: physician-patient, communication, effective communication, satisfaction, adherence

Introduction

One of the challenges in health care today is physician deficits in effective communication skills. Corroborating this argument, Lu and Zhang[1] strengthen the idea that effective physician-patient communication is the key to enhancing health outcomes; better quality of life, increasing patient satisfaction, raising diagnostic accuracy, improving patient understanding and adherence to treatment. It can be shown that the essential ingredients for effective communication are to be found in the health field. Studies, in this regard, indicate correlations between effective communication and improved health outcomes, and level of patient satisfaction.[2,3] It has also been demonstrated that effective physician-patient communication has a positive impact on patients' satisfaction and adherence to treatment.[4,5] Effective communication in healthcare enhances clinical decision-making and diagnosis, fosters teamwork by making treatment centered

2509

on the patient, saves time, and benefits both the patient and the physician.[6] Moreover, physician-patient communication plays an important role in patient wellbeing both physically and emotionally, and to some extent can determine the health outcomes of the patient. Patients repeatedly identify good physician-patient communication as an essential element in quality healthcare, and physicians must have effective communication skills.[4,7]

On the contrary, many physicians seem to overlook the importance of effective communication with their patients, and a breakdown in communication between physician and patient can lead to a lot of patient dissatisfaction and complaints.[8] A poor method of communicating with a patient can have a substantial impact on how they see their sickness and whether they decide to stop or continue medical treatment since the good communication of clinicians' results in enhanced patient's adherence, and it also increases physical and psychological outcomes of the patient.[9] According to Gooch,[10] patients can describe what they are feeling and the doctor can perceive what they are saying. Patients are also able to describe whether they are treated well and given adequate advice and information about their illness and medication which can result in patient satisfaction. Communication, therefore, has a central role in the therapeutic process.

However, doctors may vary markedly in their communication competence which can lead to different patient perceptions. Thus, many patients complain about their physician citing interactional problems during the clinical process. Improving patient and provider satisfaction and the quality of health care by implementing patient-centered care is timely manner.[6] It comes as no surprise that the majority of grievances against physicians' center on communication problems rather than professional competence.[11] Accordingly, communication remains the key to patient satisfaction. MSelvarajah et al[12] defined patient satisfaction as the perspective of the patient's experience with the physician and the services they receive including their health plan. In light of this, the Joint Commission on Accreditation of Healthcare Organizations explains that the causes of 60–70% of preventable hospital deaths are due to communication error.[13] Moreover, poor communication can have a variety of detrimental effects on non-adherence and patient dissatisfaction. Tiwary et al[14] estimate that poor communication contributes to 27% of medical malpractice. Medical errors and patient injuries can be decreased with better communication. It is important to recognize when there is a communication issue between a patient and a physician, and resolve the problem immediately.

Regarding the role of adherence, the most common cause of treatment failure is non-adherence. According to Pendleton et al,[15] patient adherence is affected by the way consultation is performed. Patient adherence can be defined as the degree to which a patient's actions correspond with the prescribed medication dosing regimen, including time, dosing, and interval of medication use.[16] If a patient does not take their prescription as directed, they are frequently reluctant to tell their physicians. In this vein, the World Health Organization (WHO) has identified five kinds of factors that contribute to non-adherence: patient and family dependent factors, illness-related, treatment-related, healthcare system-related, and socio-demographic and economic factors.[17] Blair and Gupta[18] add that communication and treatment satisfaction are related factors to the healthcare system.

However, research on issues connected to the healthcare system, particularly satisfaction with treatment and its impact on adherence, is largely inadequate. Patients in sub-Saharan African countries like Ethiopia have reported numerous problems in the way physicians communicate during treatment. Physicians underestimate patients, and many medical errors are invisible.[19] While even minor medical fallibilities have media coverage, if the victims are elite or high-class families, the less privileged and less assertive members of the community are ignored and given less attention. Health-related problems may be compounded by poor communication and interpersonal relationship skills.

In studies of patient satisfaction, it is frequently difficult for people to accurately judge the quality of the health care that they receive, but it is not difficult to assess whether one is satisfied with the communication accompanying that care.[20] For nearly two decades, analyses of patient satisfaction surveys have reflected that the surveys address all health care service, including communication. The present study used the average of CAT items to determine the communication satisfaction score for each patient, which recognizes the link between high overall scores in communication ratings and patient satisfaction. Hence, the study focuses on assessing the level of patient satisfaction in the whole process of their communication with their physicians and its impact on adherence among state hospitals in Ethiopia.

The specific objectives of the study were to:

1. Assess the level of patient satisfaction in communication in medical establishments.
2. Find out whether communication satisfaction is related to patient demographic characteristics.
3. Examine the relationship between physician-patient communication satisfaction and patient adherence.

Methods

The study employed a quantitative approach with a cross-sectional study design. A questionnaire survey was administered (Appendix), and both descriptive and inferential statistics were used in the analysis of the data. The study used correlation, independent sample *t*-test, one-way ANOVA, and linear regression to show causal relationships among factors in patient communication. The regression statistical technique was utilized to analyze the relationship between the dependent (adherence) and independent variable (communication satisfaction). The regression line is used in regression to produce predictions. The results of the simple linear regression analysis were presented as beta, a ratio of 95% confidence interval (CI), and *p*-values. The regression analysis examined the degree of relationship between two variables and how the independent variables impacted the dependent variable.[21]

Participants

The participants of the study were selected from Dessie and Felege-Hiwot comprehensive hospitals purposively. The study used a sample of 381 respondents from both hospitals. The reason behind the selection of two hospitals was their higher patient load compared with the other six comprehensive specialized hospitals found in the region. In addition, the two hospitals serve out-of-state patients from Afar and the Benishangul-Gumuz regions, which are continuous with the Amhara region.

In-patients admitted to the hospital to stay overnight, aged between 18–65 years, who consented to participate in the study were recruited as data sources.

Sampling Frame and Sample Size

The sample size of participants was calculated by using the Cochran formula. Cochran[22] developed the following formula for determining a representative sample for proportions:

$$n_0 = \frac{Z^2 pq}{e^2}$$

Because of a large population, it was difficult to know the variability in the proportion that would adopt the recommended practice. As a result, P = 5 (maximum variability) was used in the study. Furthermore, the study desired a 95% confidence level, which is the most commonly used in the research literature.[23] The final sample size was 381, which was then proportionally distributed among the wards. The study subjects were chosen using a systematic random sampling procedure from the total number of patients.

Data Collection Tools

A questionnaire was adapted from the Communication Assessment Tool (CAT)[24] and the Adherence to Refills and Medication Scale (ARMS).[25] In everyday clinical practice, the CAT can be used to collect data and provide coherent feedback on communication satisfaction.[24] The questionnaire consisted of 14 items using a 5-item Likert scale, ranging from 1 (poor) to 5 (excellent), dealing with the quality of specific aspects of physician-patient communication. Overall scale reliability was high (Cronbach's alpha was 0.94), which demonstrated good internal consistency. The alpha coefficient is consistent with the high reliability found in Makoul's original scale reliability and validity testing (Cronbach's coefficient alpha = 0.98).[24]

The ARMS, on the other hand, is a tool with 12 items measuring patients' medication adherence.[25] The overall reliability result proved to be high (Cronbach's alpha 0.93) in this sample which demonstrated good internal consistency.

The questionnaire was prepared in English first and translated to the local language, Amharic, and again a backward translation to English was made to ensure the consistency of the items. A pretest was done on 5% of the sample size in an area different from the study area before actual data collection.

Study Site

The study area, Amhara Regional State, is the second most populous region in Ethiopia. It is located in the northwestern and north-central parts of the country. According to the Ethiopian Central Statistics Agency (ECSA),[26] the region has an estimated population of 22.19 million people, with rural farmers accounting for around 80% of the population.[26,27]

The region has 861 Health Centers, including 82 that deliver service to mainly rural communities. In the region, 11 hospitals, 1021 clinics (on different standards), and 879 pharmacies are privately owned.[27] According to the UNICEF[28] regional budget brief of Amhara Regional State, the region has poor health coverage compared to other regions in Ethiopia.

Ethical Consideration

The study was approved by the Ethics Review Board of the Amhara Public Health Institute (APHI) (Reference number NoH/R/T/T/D/5/23 issued on March 11, 2022). Informed consent was obtained from the respondents prior to the questionnaires and interview administration.

Analytical Frame Work

The study is mainly guided by communication accommodation theory (CAT). In the study of healthcare communication, CAT helps the researcher anticipate and clarify nonverbal and verbal behavioral changes made by caregivers and patients to establish, maintain, or minimize social distance in interaction.[29] CAT focuses on the ways individuals modify their communicative behavior as a result of their communication with each other and helps to comprehend when and how patients and physicians adjust their communication with one another.

As Giles[29] stated, the theoretical construct of accommodation is made up of two constructs: convergence, or matching the communication style of another, is indicative of perceived or desired similarity, while divergence indicates a desire to emphasize differences in communication style. Other ways in which providers or patients may accommodate another person include taking into account the conversational needs of others and the individuals' power or role relations in the interaction. Those traditionally perceived as having greater power tend to be accommodated more than those with less power.[29]

As a result, CAT offers a helpful framework for predicting and explaining the various modifications and adjustments that patients and physicians could make in order to create, maintain, or lessen social distance during the medical encounter. Furthermore, Street[30] strengthens the idea that understanding how patients perceive physicians' accommodating behavior in influencing patients' satisfaction with the clinical encounter through various accommodation strategies is extremely useful. CAT can help evaluate the effect of accommodation on these outcomes because various accommodation tactics may affect patient- centered outcomes, such as patient satisfaction. People have the option of adjusting or not adjusting their communicative acts in connection to others in a certain environment. Interactions involving communication can be influenced by both social and personal identities as participants in particular groups.[31]

Results
Patients' Satisfaction While Communicating with their Physician

Based on the CAT survey, the data in Table 1 shows the dispersion and central tendency in As clearly indicated in Table 1, the total mean score for communication satisfaction was M = 2.69. The overall score of communication satisfaction for each patient was calculated as the average of satisfaction items. A score of 3 or more was taken as an indicator of a patient's perceived satisfaction and scores of <3 were considered as signaling dissatisfaction. As a result, it seems there was pervasive dissatisfaction.

Table 2 shows the level of communication satisfaction for items.

The highest rated aspects of communication included such items as "the physician greeted me in a way that made me feel comfortable" (M = 3.30 SD = 1.038), "the physician treated me with respect" (M = 3.44 SD = 0.960), "the physician

Table 1 Level of Communication Satisfaction of Patients with their Physicians

Variable	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Communication Satisfaction	378	4.00	1.00	5.00	2.6988	0.80588	0.649
Valid N	378						

Table 2 Mean and Standard Deviation Across Response Categories for Each Communication Assessment Tool

No.	Items	Mean	SD
1	The physician greeted me in a way that made me feel comfortable	3.30	1.03
2	The physician treated me with respect	3.44	0.96
3	The physician showed interest in my ideas about my health	3.02	1.06
4	The physician understood my main health concerns	2.93	1.03
5	The physician paid attention to me (looked at me, listened carefully)	2.94	1.09
6	The physician let me talk without interruptions	2.71	1.08
7	The physician gave me as much information as I wanted	2.45	1.11
8	The physician talked in terms I could understand	2.84	0.99
9	The physician checked to be sure I understood everything	2.35	1.05
10	The physician encouraged me to ask questions	2.08	1.13
11	The physician involved me in decisions as much as I wanted	2.29	1.01
12	The physician discussed the next steps, including any follow-up plans	2.11	1.07
13	The physician showed care and concern	2.96	1.05
14	The physician spent the right amount of time with me.	2.36	1.03

showed interest in my ideas about my health" (M = 3.02 SD = 1.062), "the physician showed care and concern" (M = 2.96 SD = 1.057), "the physician understood my main health concerns" (M = 2.93 SD = 1.035), "the physician paid attention to me" (M = 2.94 SD = 1.091), "the physician talked in terms I could understand" (M = 2.84 SD = 0.991) and "the physician let me talk without interruptions" (M = 2.71 SD = 1.085).

According to patient reports, patients most commonly omitted such aspects as, "the physician gave me as much information as I wanted" (M = 2.45 SD = 1.11), "the physician checked to be sure I understood everything" (M = 2.35 SD = 1.056), "the physician encouraged me to ask questions" (M = 2.08 SD = 1.134), "the physician involved me in decisions as much as I wanted" (M = 2.29 SD = 1.017), "the physician discussed next steps, including any follow-up plans" (M = 2.11 SD = 1.070), and "the physician spent the right amount of time with me" (M = 2.36 SD = 1.039). The detailed results are below the mean and among the lowest scoring items.

Influence of Socio Demographic Factors on the Patient Level of Satisfaction

Of the 378 respondents involved, the number of male respondents (54.0%) exceeded the number of female respondents (46.0%). A third of respondents were in the age group of 35–45 years (31.0%), followed by respondents aged 25–35 (26.2%). Further, the majority of respondents (217), comprising 57.4%, were rural. It was found that the majority of respondents were married (58.5%) and employed (64.3%), and almost half of patients (173 [45.8%]) had seen their physician three or more times before the study visit. Results also showed a little more than half of the respondents had no formal education (52.1%).

The other component of the study was examining whether there were differences in patients' communication satisfaction with their physician based on the patients' demographic characteristics.

As shown in Table 3, sex, place of residence, and employment did not lead to a systematic difference.

Table 3 *t*-Test Result of Variables

Variable		N	Mean	Std. Deviation	F	Sig (2-Tailed)
Sex	Male	204	2.6579	0.78883	0.356	0.286
	Female	174	2.7467	0.82512		
Place of residence	Rural	217	2.7324	0.74737	5.921	0.35
	Urban	161	2.6535	0.87897		
Employment	Employed	243	2.7084	0.83018	2.510	0.75
	Unemployed	135	2.6815	0.76289		

An attempt was made to determine the impact of various parameters on communication satisfaction. An independent samples *t*-test was conducted to see the impact of demographic characteristics on the level of communication satisfaction. Accordingly, communication satisfaction scores for males (M = 2.6, SD = 0.78) and females (M = 2.7, SD = 0.82) showed that there was no significant mean gender-based difference (F = 0.356, *p*-value = 0.28, p > 0.05). Similarly, an independent samples *t*-test was conducted to compare communication satisfaction between rural and urban subjects. The scores for rural (M = 2.73, SD = 0.74) and urban subjects (M = 2.65, SD = 0.87) revealed that there was no significant difference in mean between rural and urban areas (F = 5.921, p-value = 0.35, p > 0.05). Further, the test scores for employed (M = 2.70, SD = 0.83) and unemployed (M = 2.68, SD = 0.76), showed no significant difference in mean between employed and unemployed (F = 2.51, *p*-value = 0.75, P > 0.05).

An ANOVA test was run to determine the role of other variables; age, frequency of visit, education, and marital status. As Table 4 shows, age and frequency of visits were significantly associated with communication satisfaction, while educational level and marital status failed to produce a systematic effect.

As indicated in Table 4, a one way analysis of variance between age groups was conducted to explore the impact of age group on the level of patients' communication satisfaction. Participants were divided into five groups based on demographic characteristics (age group: 18–25 years, 25–35 years, 35–45 years, 45–55 years, and 55–65 years). As shown in Table 4 a one-way ANOVA revealed that there was a statistically significant difference (F = 4.040, *p*-value = 0.003, p < 0.05). The post hoc comparisons indicated that the mean score in communication satisfaction for the age group (35–45) (*mean difference* = 5.17) was slightly higher than the other age groups and the age group (25–35) (M= −0.78) had less communication satisfaction compared with all others.

Similarly, a one-way ANOVA was conducted to explore the impact of the frequency of visits on the level of patients' communication satisfaction. In the demographic characteristics, participants were divided into three groups (one-time visitors; 2–3 times visitors; and 3 and above times visitors). As shown in Table 4, a one-way ANOVA revealed that there was a significantly different for at least one group (F = 10.540, *p*-value = 0.00, *p* < 0.05). The post hoc comparisons indicated that the mean score for 2–3 visits (*mean difference* = 0.43) was associated with slightly higher communication satisfaction, and one-time visit (M = −0.43) was related to lower communication satisfaction.

Table 4 ANOVA Result of Variables

Variable	N	Mean Square	F	Sig.
Between age groups	378	498.199	4.040	0.003
Between frequency of visit	378	1276.949	10.540	0.000
Between marital status	378	1.168	1.81	0.145
Between educational level	378	0.157	0.240	0.869

Regarding education and marital status, the test result was not significant. Thus, the test results in terms of education (F = 0.240, *p*-value = 0.869 p > 0.05) and the test results in terms of marital status (F = 1.81 *p*-value = 0.145 p > 0.05) showed that there was no significant difference in scores based on level of education and marital status.

Impact of Communication Satisfaction on Patient Adherence

An attempt was made to determine the impact of communication satisfaction on patient adherence using simple regression analyses as shown in Table 5.

Table 5 shows that the correlation between patient satisfaction with communication scores on the CAT questionnaire was significantly correlated with pharmaceutical adherence (ARMS score) (r = 0.316, *p*-value = 0.000, p<0.001), indicating that when patients were satisfied with communication, the level of adherence increased.

The strength and direction of a linear link are the only two things that Pearson's linear correlation coefficient measures. The regression line is used in regression to produce predictions. It gives estimates of how much one variable influences another. According to Jain and Chetty,[21] when both the variables are interval-level, regression analysis can be used in certain situations with a nominal or ordinal independent variable when we want to measure the impact or amount of change one variable produces on another. As explained above, linear regression was used to determine whether a sample comes from a population with a specific mean. In doing so, this study conducted linear regression to show the impact of communication satisfaction on adherence.

When a researcher decides to use linear regression to analyze data, part of the process includes ensuring that the data they intend to examine can really be analyzed using linear regression. This is necessary because linear regression can only be used if the data "passes" six assumptions that are required for linear regression to produce a legitimate result for the researcher.[21] As a result, the researchers tested six assumptions: that the data was fairly normally distributed, that the dependent variables were measured at the interval or ratio level (continuous), that there were no significant outliers, that the samples were drawn at random from a known population, that a linear relationship existed between two variables, and that the dependent variable has the same variance for all independent variable values. In addition, a scatter plot showed that the relationship between communication satisfaction and adherence was positive and linear and did not reveal any bivariate outliers. Finally, an analysis of standard residuals showed that the data contained no outliers (std. Minimum residual = −3.501, Maximum residual = 2.24). The independence of residual error was confirmed with a Durbin-Watson test (d = 1.51). Residual plots showed homoscedasticity and normality of the residuals.

The data in Table 6 clearly shows that communication satisfaction statistically significantly predicted patient adherence (F 95.236, *p*-value= 0.000, p<0.001), accounting for 20.2% of the variability in patient adherence with adjusted R^2 = 20%. The correlation between communication satisfaction and patient adherence was statistically significant (r= 0.45). The magnitude, or strength, of the association is approximately moderate (0.3 < | r | < 0.5).[32] This suggests a one unit change in

Table 5 Correlation Analysis of Communication Satisfaction and Adherence

Variables		Level of Communication Satisfaction	Patient Adherence
Level of communication satisfaction	Pearson Correlation	I	0.316**
	Sig. (2-tailed)	-	0.000
	N	378	378
Patient adherence	Pearson Correlation	0.316**	I
	Sig. (2-tailed)	0.000	
	N	378	378

Note: **Correlation is significant at the 0.01 level (2-tailed).

2515

Table 6 Regression Table

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate	Durbin-Watson	F	t	Sig.	Unstandardized Coefficients		95.0% Confidence Interval for B	
									B	Std. Error	Lower Bound	Upper Bound
1 (constant)	0.450[a]	0.202	0.200	0.62447	1.5	95.23	9.759	0.000[b]	1.850	0.112	1.629	2.071

Notes: [a]and [b]predictors. (Constant), communication satisfaction.

communication satisfaction can bring a minimum 1.69 and a maximum 2.07 change or increase in patient adherence. In other words, 20.2% of the variation in communication satisfaction can be explained by patient adherence.

Patient communication satisfaction was a significant predictor of patient adherence. The result ($R^2 = 0.20$) indicated about 20% of the variation in patient adherence was explained by communication satisfaction. Communication satisfaction in the regression model was a significant predictor of patient adherence (F = 95.236, p = 0.00, p<0.05). The regression coefficients also showed patient communication satisfaction (b = 1.85, t = 9.759, p<0.05) was a significant contributor to patient adherence. The confidence interval for the slopes to predict patient adherence to communication satisfaction was 95% CI (1.629, 2.071). Thus, for each unit of increase in communication satisfaction, patient adherence increases by about 0.311 to 0.468 points.

Discussion

Patient communication satisfaction is a popular way of evaluating relational dimensions of health service in most developed countries, but much less is known about the construct in developing countries like Ethiopia. To our knowledge, this study is the first of its kind in Ethiopia to assess the level of patient communication satisfaction and its impact on adherence in selected hospitals in the Amhara region.

CAT was originally designed to assess patient perceptions of an individual physician's communication effectiveness and is also a viable and reliable instrument for assessing patient impressions of a physician's interpersonal and communication skills. Moreover, Stausmire et al,[33] strengthen the idea that the CAT is an important tool for assessing patients' impressions of physician communication skills, and it can be used as an evaluation as well as a learning instrument. In light of this, the average of CAT items was used to determine the mean communication satisfaction score for each patient. In other words, the overall score of communication satisfaction for each patient was calculated as the average of satisfaction items. The finding revealed that a score of 3 or more was taken as an indicator of patient's perceived satisfaction and a score <3 was considered as denoting dissatisfaction.[34] The overall rating of communication satisfaction in the study mean was 2.6 (Table 2). The low mean CAT aggregate score for this segment of the sample showed patients were dissatisfied in their communication with their physicians.

The results from the questionnaire survey for patients show that the majority of the respondents had a negative perception of the quality of interaction with their physicians. The present findings differ from those of studies of patient satisfaction conducted in Jimma specialized hospital, Wolaita Sodo University Teaching Hospital, and Debre Berhan Referral Hospital in Ethiopia which reported that 77%, 54.2%, and 49.2% of patients respectively were satisfied.[34–36] However, it is important to note that the studies evaluated patient satisfaction as a global construct involving all services patients received from the hospitals, but the central thesis of this paper is the level of satisfaction with communication between physician and patient and the significant effect of communication on patient adherence. According to the results of the study, physician communication with their patients is an important factor in predicting patient satisfaction levels. A rise in communication satisfaction can be expected among patients as health service providers effectively communicate with their patients. The present study indicates attention to communication needs among patients can lead to gains in patient satisfaction scores.

The demographic characteristics included patient age group, gender, marital status, education level, frequency of visit, and employment status. These were considered separately in order to determine whether patients in the different

subgroups of the particular demographic had different levels of communication satisfaction with their physicians; whereas, gender, marital status, level of education, place of residence, and employment of respondents were found to have made no significant contribution to patients' level of communication satisfaction. This agrees with some studies which reported similar findings that none of the socio-demographic variables studied were found to have any statistically significant relationship with patient satisfaction.[37,38] But the results differ from those of other studies, which demonstrated that a patient's marital status was statistically associated with the level of patient's satisfaction, respondents who were divorced had 0.622 units greater satisfaction compared to those married.[39] Accordingly, Jalil et al[40] found significant variations in levels of satisfaction across gender, education, and occupational status, being female was associated with a lower likelihood of being dissatisfied.

However, the age and frequency of visits significantly influenced patients' communication satisfaction levels. This finding agrees with the finding of Chandra et al[41] who showed age was significantly associated with patient satisfaction, but it differs from other studies which reported no relationship between the level of satisfaction and age.[42] Besides, patients' frequency of visits determined patient satisfaction, which was found to statistically influence the patient's communication satisfaction (Table 4). It was found that the higher the number of visits, the higher the level of satisfaction.

The results seem to suggest that hospitals need to ask patients about the care and treatment they have received from their physicians, which would help raise the standard of care they provide.[43] The degree to which a patient feels satisfied has a significant impact on whether they seek medical counsel, improve non-adherence, and have a good rapport with physicians.[44] In the present study, satisfaction with communication was significantly correlated with adherence, indicating effective patient-physician communication can improve adherence.[45] In this study, the correlation between communication satisfaction and adherence was 0.451. By squaring the correlation and then multiplying by 100, the percentage of the variability shared can be determined. Then rounding off 0.451 and squaring it would give 0.202, which multiplied by 100 would be 20.2%. Hence, an inference can be made that 20.2% of adherence failures are due to the communication satisfaction level of patients. This means, more satisfaction with communication was associated with a lower ARMS score, indicating better adherence. In other words, adherence to pharmaceutical treatment depends on satisfaction with communication.

The above result showed the relationship between communication satisfaction and patient adherence. Intuitively, the study expected these two variables to have some form of relationship, but correlation analysis allowed quantifying the association. To estimate how much one variable would influence another, it was necessary to conduct regression analysis as a further strategy. The result of regression showed that the patient communication satisfaction explained a statistically significant proportion (20%) of the variance in adherence, $R^2 = 0.202$ adjusted $R^2 = 0.20$. It can be seen from Table 6 that communication satisfaction was found to have a significant impact on adherence (F = 95.236 = 20.2, p-value = 0.00, p<0.05). A positive relationship was found between communication satisfaction and adherence (b = 1.85, t = 9.759, p<0.05), indicating that with better quality of communication, the level of adherence increased. The communication satisfaction-adherence link is consistent with evidence in the literature that satisfaction with physician-patient communication has a significant impact on patients' adherence.[45]

The findings seem to suggest that, failures in communication can result in major undesirable occurrences in addition to dissatisfaction. According to a report on incidents in Victorian hospitals in 2008–2009, communication contributed to 20% of these incidents.[46] Thus, it can be argued that the impact of communication satisfaction on adherence is stronger only through an influence on the quality of communication to the treatment, suggesting the more satisfied the patient is with communication, the better their adherence.

The findings of the present study show that patients who assigned lower scores to such items as; "the physician gave me as much information as I wanted", "the physician checked to be sure I understood everything", "the physician encouraged me to ask questions", "the physician involved me in decisions as much as I wanted", "the physician discussed next steps, including any follow-up plans and the physician spent the right amount of time with me" implied that these areas are core aspects of physician-patient communication that carry more meaning and importance among patients. It is asserted that communication convergence between physicians and patients can increase patient satisfaction.[29] In light of the above discussion, the study indicates that when physicians engage in accommodating behavior that converges, patient satisfaction will be higher, and when they engage in accommodating conduct that diverges, patient satisfaction will be lower.

Conclusion

The majority of participants were found to be dissatisfied with the physician-patient communication in the sampled hospitals. Demographic characteristics, such as gender, marital status, level of education, place of residence, and employment of respondents were found to have no significant contribution to patients' satisfaction in communication, whereas age and frequency of visit had a significant influence. A key component of providing high quality medical treatment is effective provider communication with patients. As a result, communication and interpersonal skills are regarded as fundamental competencies in healthcare.

It was found that medication adherence was influenced by patient satisfaction. The study findings indicated that increasing adherence requires enhancing the quality of communication Physicians with effective interpersonal and communication skills identify issues early, avoid health-related problems, and give their patients better support. This might result in better satisfaction and improved adherence. Hospitals need to provide targeted communication skills training for their physicians, particularly in the areas of encouraging questions and including patients in decision-making, in order to provide instruments for focused improvement and assess the effect of training interventions on outcomes.

Author Information

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Disclosure

The authors report no conflicts of interest in this work.

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