

## ORIGINAL ARTICLE

# Patients' Perspective on the Effect of Internet-Derived Health Information on the Patient-Physician Relationship

Ebereghwa EM\*, Orhe OG, Anyanwu EB.

*Department of Family Medicine, Delta State University, Abraka, Nigeria.*

### ABSTRACT

**Background:** The search for health information in the internet by patients is progressively increasing and more likely to be presented to the physician during consultation. Concerns have been expressed on how this may impact on the patient-physician relationship. The study assessed the use of internet for health information by patients and their perception of physicians' response to sharing this information.

**Methods:** A cross-sectional study conducted at the Family Medicine Clinic, Delta State University Teaching Hospital, Oghara, Nigeria among adults  $\geq 18$  years recruited using systematic random sampling method. Data was obtained using interviewer-administered questionnaire and analyzed using Statistical Product and Service Solution version 23. Statistical significance was evaluated at  $p < 0.05$ .

**Results:** The study had 225 participants. Mean age was  $43.42 \pm 15.33$  years, with more females 135 (60.0%). Those who used the internet to seek health information were 101(44.9%) and 91(90.1%) sought information to decide if they needed to see a doctor or not. Over half 62 (61.4%) discussed their search with a doctor. Very few felt the doctor was dissatisfied, 13(12.9%) and that discourse led to harm of their relationship with the doctor, 5(4.9%). Age was significantly associated with participants' perception of the effect of online health information on doctor-patient relationship ( $p = 0.001$ ).

**Conclusion:** Significant number of patients used the internet to seek health information and many discussed it with a doctor, who they perceived to have responded positively. Physicians should be open to discuss online health information with patients and to provide professional counsel as this will foster better patient-doctor relationship.

**Keywords:** Effect, Health information, Internet, Patient-physician relationship.

### INTRODUCTION

In the past, physicians were the sole source of health information for patients, however, with the growing digitalization of our everyday life, the search for health information online has become a common activity carried out reflexively in order to get first opinion on health issues, to obtain knowledge on their health conditions before seeking a professional diagnosis, fill information gaps outside the clinical encounter and / or in anticipation of or in response to consulting a doctor.<sup>1, 2</sup> The internet and online health information is expected to change the relationship and communication dynamics between patients and physicians within the clinical encounter.<sup>1, 3</sup>

Traditionally, the patient-physician relationship portrays an unequal power balance and

information asymmetry between authoritative, decision making medical expert and passive patients.<sup>1</sup> However, there is a current shift from this paternalistic model to an approach that bring to the fore patient involvement, collaboration and shared medical decision making.<sup>1</sup> However, as the use of the internet for health information by patients becomes more pervasive, the traditional dyadic relationship of patient-physician is likely to be expanded into an information triangle or triadic relationship involving patient, physician and the online health information.<sup>1, 2</sup> This is expected to change the expectations and needs of the patients in their interactions with their physicians and may result in a change of patient's role from a passive recipient to an active participant in decision-making process in relation to health care and how they feel about their relationship with their physicians.<sup>1-3</sup> On the other hand, it may add a new interpretative role to physicians' responsibilities during consultations as internet-informed patients may have more questions and may request additional treatments or medications during consultations.<sup>2</sup> It could also lead to some physicians

**\*Corresponding author:**

Dr Eguono Marian Ebereghwa,  
Department of Family Medicine,  
Delta State University,  
P.M.B 01, Abraka, Nigeria.  
Email: [emebereghwa@gmail.com](mailto:emebereghwa@gmail.com)  
Phone: +2348023672922

feeling anxious, devalued or threatened while others see it as an opportunity for more informed and effective consultation.<sup>3</sup>

Globally, the number of patients who search for health information online and then introduce the information into the consultation seems to be rising with many physicians experiencing this.<sup>3</sup> Notwithstanding, the potential benefits of internet health information seeking to providing easy accessible information, patients can also become overwhelmed and confused by the retrieved information, especially when patients lack health literacy skills or the ability to sort through online health-related information.<sup>2, 4, 5</sup> This can lead to misinterpretation and misuse of information.<sup>4,5</sup> The discussion of health information obtained from the internet by patients with their physicians can prevent costly consequences that could occurred from delayed treatment or harm resulting from acting on inaccurate or misunderstood health information.<sup>4</sup> Farnood *et al* in a mixed method systematic review reported that patient usually present information obtained to healthcare professionals to support the therapeutic relationship and not to challenge it. Also, patient felt responsible for their own health and wanted to be involved in the decision-making process of their healthcare.<sup>6</sup> The internet for the patients was a complementary source of information to the healthcare professionals who were perceived as the most reliable and valued source of information.<sup>6</sup> Nevertheless, patients who regularly use the internet to access health information regarding their health conditions may fail to discuss with a health professional about their online health information seeking due to various patient-perceived barriers which have been scarcely studied.<sup>5</sup> Feeling uncomfortable with the quality of online information, finding information to fully answer their questions, feeling nervous about harming their relationship with the physician, being afraid to be seen to challenge the physicians' authorities and time constraints were some reasons stated to restrain patients from discussing their online search with their physicians.<sup>5</sup>

Patients' perception of how their physicians receive internet derived health information is critical, as it can enhance or threaten patients' sense of empowerment, patient-physician relationship and patient's health outcomes.<sup>5</sup> When physicians express discomfort with patients' internet search and assuming a defensive stance can negatively affect patients' trust in physicians.<sup>5</sup> The unwillingness of physicians to listen to or keep up with recent information can lead to patients being discouraged and likely to withhold information in future consultations especially if they perceive the physicians as being dismissive of their efforts.<sup>5</sup> Furthermore, concerns have been raised about patient's satisfaction and trust in

the physician being affected if patient's online findings do not align with physician's diagnosis or treatments.<sup>2</sup> As this may result in conflict or even argument between the physician and patient leading to patient opting for a second opinion such as changing the treatment plan or self-medicating using recommendations gotten from the internet.<sup>2</sup> Yet, genuine interest and positive comments from physicians on patients internet information shared even when not in agreement is said to improve patient satisfaction and build more collaborative patient-physician relationship.<sup>5</sup> It also, serves as a gesture that physicians' approve and welcome patients' proactive role in healthcare.<sup>5</sup> Thus, the need to create a comfortable environment where patients feel safe to discuss online health information. Little is known about the extent to which online health information is being discussed during clinical encounter and how patients think of their physicians' reaction to such discussions. Hence, this study sought to determine patients' use of internet for health information and their perception of physicians' response to sharing of health information obtained from the internet.

## **MATERIALS AND METHODS**

It was a hospital based cross sectional study carried out at the Family Medicine Clinic of Delta State University Teaching Hospital (DELSUTH), Oghara, Nigeria.

### **Study setting**

DELSUTH, Oghara is a renowned 180-bed ultra-modern teaching hospital with many clinical specialties, situated in Oghara, Ethiope West Local Government Area of Delta State, South-South Nigeria. It is one of the two tertiary health institutions providing healthcare service to Delta indigenes and its adjoining states. It provides primary, secondary and tertiary care to the populace.

### **Study population**

Adult patients (age 18 years and above) attending the Family Medicine Clinic in Delta State University Teaching Hospital, Oghara. Clinical records of the Family medicine clinic reported that a total of 5,023 adult patients attended the Family Medicine clinic in the year 2022. The study was conducted from September to November, 2023 (3 months' duration).

### **Inclusion criteria**

Adults aged 18 years and above willing to participate in the study with the ability to give informed consent.

### **Exclusion Criteria**

Critically ill patients.

### **Sample size determination and sampling method**

The sample size was determined using a single population proportion formula,  $n = z^2 pq/d^2$ ,<sup>7</sup> using  $z$  as 95% of confidence level,  $d$  as 5% margin of error and  $p$  was the estimated proportion with the attribute of interest which was 24.8% obtained from a previous study,<sup>8</sup> and  $n$  the minimum sample size was 287. Since the number of patients seen in the clinic in the previous year was less than 10,000 (5023), the sample size was adjusted by the formula;  $nf = n/(1 + n/N)$ <sup>7</sup>, where,  $n$  was the desired sample size when the population is more than 10,000 which was 287, and  $N$  was population of patients aged 18 years old and above (5023). Thus,  $nf$  was the desired sample size when the population is less than 10,000, calculated to be 272. Therefore, the minimum sample size was 272.

The study participants were recruited using systematic random sampling method. Using  $K = N/n$ ,<sup>7</sup> where  $K$  was the sampling interval,  $N$  was the sampling frame (5023 patients aged 18 years and above were seen in 12 months, then 1256 patients were seen in 3 months) and  $n$  was 272. A sampling interval of 5 was obtained. The first subject was selected by simple random and every 5<sup>th</sup> participant was selected by systematic random sampling until the required sample size was met. To prevent multiple sampling of the same patients, the folders of patients already recruited was marked with a code.

### **Data collection method**

A pretested interviewer-administered questionnaire was used for data collection. The questionnaire was adopted from a previous study,<sup>9</sup> and consists of sociodemographic characteristics, question on ever used the internet to search for health information and questions related to patient's perception of physician's reaction to presentation of health information obtained from the internet. The patients' perception of the effect of internet use on their relationship with their doctor was assessed using seven items. A positive response was given a score of 1 and a negative response was given a score of 0. The scores of each participant were summed up and a total score of below 50% was classified as negative perception, while a score of 50% and above was classified as positive perception of patient towards the effect of internet-derived information on their relationship with their doctor.

### **Data analysis**

Data was entered into excel spreadsheet and coded into the Statistical Product and Service Solution (SPSS) version 23 (IBM, Chicago) for analysis. Demographic variables and categorical variables were presented using frequency tables as appropriate. Continuous variables such as age were presented using means and standard deviation. Statistical association was analyzed using the Chi square test and Fisher's test as applicable in contingency tables. Statistical significance was evaluated at  $p < 0.05$  at the 95% confidence interval.

### **Ethical consideration**

Approval was obtained from the Research and Ethics Committee of Delta State University Teaching Hospital, Oghara. The approval number is HREC/PAN/2023/050/0581 and was approved on the 21<sup>st</sup> of August, 2023. Informed consent was obtained from all the participants before data collection. All information was treated confidentially and participants could withdraw at any point without prejudice to their future care.

### **RESULTS**

Two hundred and seventy-two participants were recruited in the study, however, forty-seven had incomplete data, leaving a total of two hundred and twenty-five participants with a response rate of 82.7%. Of the 225 participants, 124(55.1%) had never used the internet to look up health information while 101(44.9%) had used the internet to look up health information and their perception was then assessed.

The socio-demographic characteristics of the 225 participants is shown in Table 1. The mean age of participants was  $43.42 \pm 15.33$  years. There were more females 135(60.0%) than males 90 (40.0%) and nearly half 104 (46.2%) had tertiary education. The study found out that 101(44.9%) of the participants had utilized the internet to search for health information, of which nearly all 91(90.1%) sought information to decide if they needed to see a doctor or not. More than half 55(54.5%) who visited the doctor searched the internet prior to consultation. Also, online health information obtained was acted upon by about half 50(49.5%) of the participants. (Table 2)

Furthermore, over half 62(61.4%) of the participants discussed with a doctor the health information found from the internet, of which two-third 42(67.7%) reported that the doctor was very interested in hearing about health information gotten from the internet. While less than one-sixth 9(14.5%) of participants felt the doctor was not interested.

**Table 1: Socio-demographic characteristics of participants**

Variable	Frequency (n= 225)	Percent
<b>Age(years)</b>		
Below 20	14	6.2
21-30	40	17.8
31-40	46	20.4
41-50	51	22.7
51-60	39	17.3
Above 60	35	15.6
Mean age	43.42±15.33	
<b>Gender</b>		
Male	90	40.0
Female	135	60.0
<b>Religion</b>		
Christian	216	96.0
Islam	5	2.2
Traditionalist	2	0.9
Others	2	0.9
<b>Educational Level</b>		
None	9	4.0
Primary	41	18.2
Secondary	71	31.6
Tertiary	104	46.2

**Table 2: Participants' use of the internet for health information and their health-related behavioural decisions**

Variable	Frequency	Percent
<b>Ever used the internet to search for health information (n=225)</b>		
Yes	101	44.9
No	124	55.1
<b>What are the reasons for searching the internet for information? (n = 101)</b>		
To decide if I need to see a doctor	91	90.1
To treat myself	10	9.9
<b>When do you usually seek health information? (n = 101)</b>		
Before visiting a doctor	55	54.5
After visiting a doctor	7	6.9
Both before and after seeing a doctor	39	38.6
<b>Act on information I find on the internet instead of consulting with my doctor (n=101)</b>		
Always	5	4.9
Sometimes	45	44.6
Never	51	50.5

The participants who indicated that they felt the doctor was dissatisfied when they talked about the online health information were 13(12.9%) and 9(8.9%) reported that they had conflict with the doctor following presentation of health information gotten from the internet. However, over half 60 (59.4%) felt comfortable discussing online health information with their doctor, with almost two-third 61(60.4%) receiving better explanation about their illness from the doctor. Also, participants who reported that the doctor paid more attention to them were 47(46.5%) while 5(4.9%) felt that the discourse about online health information caused harm to the patient-physician relationship. (Table 3)

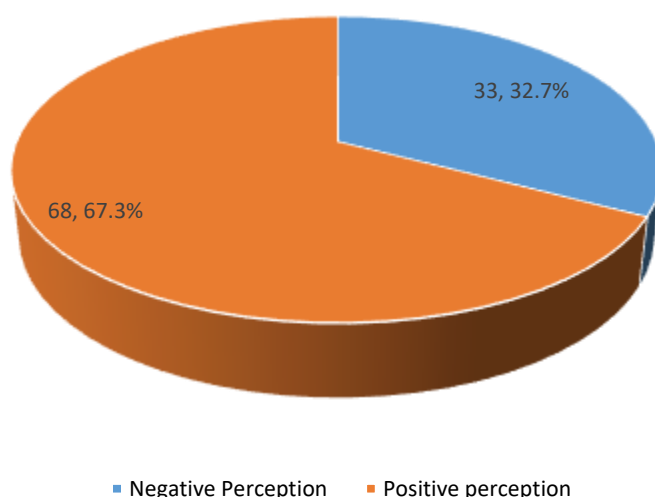
The overall level of participants' perception of the effect of online health information on

patient-physician relationship showed that 68(67.3%) had positive perception while 33(32.7%) had negative perception. (Figure 1)

Table 4 shows the association between participants' socio-demographic characteristics and their perception of the effect of internet-derived health information on patient-physician relationship. The age of participants was significantly associated with participants' perception of the effect of internet-derived health information on their relationship with their doctor. Participants in the middle-aged group; 31-40 years 23(92.0%); 31-50 years 11(61.1%); 51-60 years 7(87.5%) were more positive in their perception than the young adults 13(41.9%) and the elderly 4 (66.7%) participants.

**Table 3: Participants' perception of the effect of internet-derived information on their relationship with their doctor**

Variable	Frequency	Percent
<b>Ever discussed with a doctor about health information found online? (n=101)</b>		
Yes	62	61.4
No	39	38.6
<b>Was the doctor interested in hearing about the health information found online? (n = 62)</b>		
Very interested	42	67.7
Not interested	9	14.5
Don't know/can't remember	11	17.7
<b>When I present information from the internet to my doctor, I feel that he/she is dissatisfied. (n= 101)</b>		
Yes	13	12.9
No	88	87.1
<b>When I present information from the internet to my doctor it causes a conflict. (n=101)</b>		
Yes	9	8.9
No	92	91.1
<b>Feel comfortable presenting information from the internet to my doctor. (n= 101)</b>		
Yes	60	59.4
No	41	40.6
<b>Feel that information from the internet enables me to see the doctor as an equal. (n- 101)</b>		
Yes	9	8.9
No	92	91.1
<b>When I present information from the internet to my doctor, he/she pays more attention to me. (n= 101)</b>		
Yes	47	46.5
No	54	53.5
<b>When I present information from the internet to my doctor, it harms our relationship. (n= 101)</b>		
Yes	5	4.9
No	96	95.1
<b>When I present information from the internet to my doctor, I feel that I receive a better explanation about my illness. (n= 101)</b>		
Yes	61	60.4
No	40	39.6



**Figure 1: Overall level of participants' perception of the effect of internet-derived health information on patient-physician relationship**

**Table 4: Association between participants' socio-demographic characteristics and their perception of the effect of internet-derived health information on patient-physician relationship**

Variable	Perception		X <sup>2</sup>	p-value
	Positive (n= 68)	Negative (n= 33)		
<b>Age (in years)</b>				
Below 20	10 (76.9)	3 (23.1)	Fisher's exact test	<b>0.001</b>
21 – 30	13 (41.9)	18 (58.1)		
31 – 40	23 (92.0)	2 (8.0)		
41 – 50	11 (61.1)	7 (38.9)		
51 – 60	7 (87.5)	1 (12.5)		
Above 60	4 (66.7)	2 (33.3)		
<b>Gender</b>				
Male	36 (76.6)	11 (23.4)	3.433	0.064
Female	32 (59.3)	22 (40.7)		
<b>Religion</b>				
Christian	64 (66.0)	33 (34.0)	Fisher's exact test	0.797
Islam	2 (100.0)	0 (0.0)		
Traditionalist	1 (100.0)	0 (0.0)		
Others	1 (100.0)	0 (0.0)		
<b>Education</b>				
Primary	0 (0.0)	1 (100.0)	Fisher's exact test	0.187
Secondary	13 (59.1)	9 (40.9)		
Tertiary	55 (70.5)	23 (29.5)		

## DISCUSSION

The study examined patients use of internet for health information and their perception of physicians' response to sharing of health information obtained from the internet. Less than half of the participants had utilized the internet to search for health information. This finding was in congruent with previous studies.<sup>4, 9</sup> In contrast, studies carried out in the United States of America reported most of patients looked for health or medical information from the internet.<sup>5, 10</sup> Easy access, affordability and it being used as a filter to obtain explanation for health symptoms before visiting a doctor or not were identified as reasons for increased utilisation.<sup>10</sup>

Health information seeking is known to have a significant influence on ensuing health-related behavioural decisions.<sup>11</sup> One of such health-related behaviour is the decision to visit a physician after obtaining online health information. The study found out that nearly all the participants sought health information from the internet to decide if they needed to see a doctor or not. It was reported that many persons used the internet to avoid bothering the doctor or self-triage to decide if it was necessary to consult a general physician or not in a study done in the United Kingdom.<sup>3</sup> As the participants felt that doctors' time was constrained and did not want to be seen as attending to trivial complaints.<sup>3</sup> However, a population based study conducted in Norway reported a lower proportion of patients used the information obtained to decide whether they needed to visit the doctor.<sup>11</sup> Although, the present study did not assess the reasons for the

use of online health information to decide whether to see a doctor or not. The difference seen may possibly be attributed to the varying access to health care services of the different countries. A health care system that is tax-funded with little or no payment from patients may encourage the use of the traditional face-to-face consultations and result in decrease use of online health information compared to a health care system which can only be accessed through out-of-pocket payment by individuals as obtained in Nigeria.<sup>11</sup> A qualitative study carried out in Belgium among middle age and older adults reported that online health information was consulted with the intention to save time and money from visiting a doctor.<sup>1</sup>

Although, consulting the internet might lead to postponing or not visiting a doctor, we found that online health information can also encourage a visit to a doctor, as more than half of the participants who searched the internet for health information visited the doctor. A cross-sectional done in Belgium noted that almost half of the participants visited the doctor after online search for health information while more than one-tenth who planned to visit the doctor before search ended up not visiting the doctor after the online search.<sup>12</sup> There appear to be a synergistic relationship between online health information and the doctor, in that questions raised by one can be explained and clarified by the other, while providing additional information and explanations.<sup>1</sup>

The study found out that about half of the participants acted on the online health information instead of consulting with a doctor. A study conducted in Belgium revealed that

those who frequently searched the internet for information took medication more often without the advice of a general practitioner.<sup>12</sup> In contrast, it was found out that very few participants tend to act on information obtained from the internet according to a study done in Israel.<sup>9</sup>

Furthermore, the discussion of online health information during clinical encounter can be beneficial as it can help to identify patient's concerns, ideas, expectations and add to the diagnosis process, promote more effective communication, improve health outcomes and improve patient satisfaction.<sup>1</sup> More than half of the participants discussed with a doctor the health information found from the internet. Similar finding was reported in a previous study.<sup>13</sup> However, studies conducted in United States of America, Israel and Cyprus reported that most of the patients seldom discussed online health information with a doctor.<sup>5, 9, 14</sup> In Canada, a qualitative study identified non-physical harm and anxiety were concerns raised by adults aged 50 years and above who never communicated with a doctor about health information obtained from the internet.<sup>4</sup> Respect for physicians' expertise and authority was the reason given by participants in a qualitative study that prevented them from discussing with the doctor but quietly compared information and carefully introduced online health information into the clinical encounter.<sup>1</sup> The difference in the findings may be due to the variation in the health care setting, this study was carried out in a Family Medicine Clinic which is managed by Family Physicians who practice the patient centered model of care that encourage patients to participate in the decision making of their care which may account for more patients disclosing information gotten from the internet.

In addition, patients, while trying to manage their relationship with their doctors, often struggle with the perceived conundrum placed on them as a result of their desire to be actively involved in their own care while allowing the doctor to act as an authoritative figure.<sup>3</sup> The response of general practitioners to internet-derived information as described by patients have been categorized into; defensive and assertive of their expert opinion, working together with the patient to assess the information and providing guidance for the patient to reliable health information websites.<sup>15</sup> In this study, most of the participants reported that the doctor was very interested in hearing about health information gotten from the internet. Similar finding was found in previous studies.<sup>5, 9</sup> Positive experiences have been found to strengthen the patient-physician relationship.<sup>3</sup> General practitioners identified the internet as a supplementary resource that provides information supporting the doctor's

advice and enhancing the patient-doctor relationship especially patients who discuss their online findings.<sup>15</sup> A survey carried out in the United Kingdom, reported that most patients expect the doctor to acknowledge the effort invested and discuss the information and were ready to accept the physicians advice even if it contradicted the internet information, provided that the physician respected the information and explained the reasons for their opinion.<sup>3</sup> While a disrespectful response may have an inimical effect on the patient-physician relationship, leading to changing of doctor, seeking second opinion or obtaining treatment from the internet.<sup>3</sup> Also, very few participants felt the doctor was dissatisfied at the mention of information obtained from the internet and that the discourse resulted in conflict and harm to their relationship with the doctor. Similar finding was noted in a previous study.<sup>9</sup> Many of the participants in the study felt comfortable discussing information discovered from the internet with a doctor. The finding was consistent with previous study.<sup>9</sup> Conversely, a study done in Belgium found out that most patients were reluctant to discuss with their physician as they felt it was confrontational and feared that the doctor may react negatively and dismissively or even berate them for mentioning and trusting online health information.<sup>1</sup>

Although, the participants searched the internet for health information, they remain keenly aware of their role as patient and their relationship with their physician.<sup>1</sup> As almost all the participants did not regard themselves as equal to the doctor with respect to information gotten from the internet. This finding indicate that patients still have high regards for doctors as the learned expert and medical authority, thus confirming their central role in health management and decision making. Patients were inclined to prioritise the general practitioners' opinion over the internet information and expected the general practitioners to acknowledge the information, discuss, explain or contextualize it or provide professional opinion.<sup>3</sup> On the other hand, some patients felt that demonstrating their knowledge and prior research suggested the willingness to take responsibility for their health and would lead to greater equality between themselves and the physician.<sup>3</sup>

Many of the participants felt they received better explanation about their illness following presentation of online health information to a doctor. The same finding was noted in a previous study.<sup>9</sup> Most of the participants perceived that the presentation of internet-derived information during consultation had positive effect on their relationship with their doctor. Also, middle-aged adults were more positive in their perception of how internet-derived health information influenced their

relationship with their doctor. A study conducted in the United States of America reported that most patients had positive perception of the effect of online health information on their relationship with their doctor.<sup>5</sup> Also, the elderly and those who reported to be in excellent or very good health condition were more positive in their perception.<sup>5</sup> This should reassure doctors that patients, who present internet information during consultation, do not intend to challenge their authority, instead, it demonstrates their desire to make good use of the consulting time and to be actively involved in self-care.<sup>3</sup> There is need for physicians to use the necessary communication skills which they already possess to demonstrate respect and to engage with the patients by acknowledging their efforts put into finding this information. This will enable the physician meet patient expectations and thus enhance therapeutic relationships and improved patient satisfaction. Physicians should not be afraid to express their opinion on internet derived information especially if it is contrary to that of the patient, however, they should be prepared to explain their reasons for disagreeing.<sup>3</sup>

**Conclusion:** The study revealed an emerging use of internet for seeking health information. A significant proportion of participants discussed with the doctor about the internet derived information, which indicate that patients' still value the physicians' learned expertise and medical authority and their confidence in them is unaffected. The participants generally perceived the attitude of the doctors as positive and engaging. Young adults were more positive in their perception of how physicians responded to internet-derived health information presented during consultation. Thus, there is need to create a comfortable and receptive environment where patients feel safe to discuss online health information. Physicians should acknowledge the information, be willing to discuss, explain and provide professional opinion, as this will build patients' trust for their physicians and improve patient-physician relationship.

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