

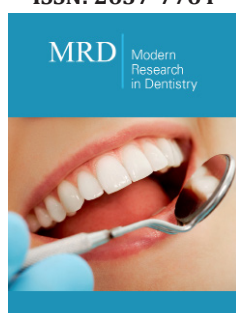
# Perception and Behavior of PIDC Patients Towards Online Dental Health Information

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## Abstract

**Background:** The Internet represents an increasingly common source of dental health related information, and it has facilitated a wide range of interactions between patient and the oral health care providers.

**Aim:** To evaluate the perception and behaviour of Penang International Dental College (PIDC), Penang, Malaysia patients towards online dental health information.

**Methodology:** A pre validated questionnaire was randomly distributed to 365 new and existing patients of PIDC attending treatment at the facility during the years 2019-2020. Convenience sampling was carried out for patients attending PIDC for their treatment. Statistical analysis: T-test was used to find the significant difference between the younger users (<35) and the older users (36-75) pertaining to using the internet for seeking dental health information. Furthermore, Pearson's correlation was applied to correlate the relationship between age and the frequency of internet use for seeking dental information.

**Result:** PIDC has a satisfactory number of patients (268) who use the internet for seeking dental health information. The patients have a positive perception towards the online dental health information gathered with a mean score of 28.7. There is a significant difference between the younger users (<35) and the older users (36-75) pertaining to using the internet for seeking dental health information ( $p < 0.05$ ). There is a significant relationship between age and the frequency of internet use for seeking dental information ( $p < 0.05$ ).

**Conclusion:** PIDC does have a satisfactory number of patients who use the internet for seeking dental health information with a positive perception towards the information gathered.

**Keywords:** Internet; Dental health information; Perception; Behavior

## Introduction

The Internet represents an increasingly common source of dental health related information, and it has facilitated a wide range of interactions between patients and oral health care providers. With easy access to the Internet these days, patients are able to gain an insight of their dental related signs & symptoms as well as information on maintaining good oral health. Information seeking behavior has an impact on the provider-patient communication, patient health status and quality of care remains an area of further inquiry, particularly in dentistry. Dental practice-based research networks (PBRNs) offers an ideal setting to assimilate dental advances and treatment decisions into practice as well as improving patient care altogether. The advantages include PBRN practitioner-investigators bringing practice relevant topics into the research agenda and engaging in the study development process. Information seeking refers to the "purposeful seeking for information as a consequence of a need to satisfy some goal." Since 2000, Internet popularity for seeking health information has

widely increased. A Pew survey in 2000 showed that 55 percent of American adults use the Internet to acquire health information [1]. Dental health information sought online by patients is not intended to replace dentists, but rather, to support it. Using the Internet to search for health information has many advantages: easy access, availability of a wide range of illustrated and audio-visual health resources, as well as providing an opportunity to ask experts' opinion [2]. Reasons for dental health seeking include the following: to know the dental pattern practiced by dentists, using personal judgment to make decisions regarding the treatment, and gathering information and experience from others [3].

## Material and Method

A cross sectional study was designed and conducted in the form of questionnaire. The questionnaire we have used in our research was adapted from a previous study done in Scotland. Before distribution of the questionnaire, validation was done. The sample size was set at 365 participants seeking treatment at PIDC in the time frame of 2019-2020. Convenience sampling was carried out for patients attending PIDC for their treatment. The questions are closed response and participants were asked to select one response from a range of categorical options. Patients had a choice to participate in the physical copy or our online questionnaire version which was conducted on Google Form at their convenience. The questionnaire was also available in Bahasa Malaysia for participants who preferred to answer questions in the local language. The data collected was entered into SPSS 16 and analyzed. The characteristics of the sample were analyzed and illustrated by descriptive means. T-test was used to find the significant difference between the younger users (<35) and the older users (36-75) pertaining to using the internet for seeking dental health information. Furthermore, Pearson's correlation was applied to correlate the relationship between age and the frequency of internet use for seeking dental information.

## Result

According to the Table 1, 268 or 73% of the respondents have used the internet to seek dental information whereas 96 or 26.2% of them have not used the internet to search for dental information.

**Table 1:** Number of patients who use the internet for seeking dental health information.

Used Internet to Find Dental Information	Yes	268	73
	No	96	26.2
	Total	364	99.2

According to the Table 2, majority of the patients, 142 or 38.7%, went online because they had developed some dental problems.

Only 33 or 9% of the respondents appeared to be checking out on the new medicines prescribed and treatment suggested.

**Table 2:** Reasons for seeking health information online.

Reason	Total
Noticing new symptoms or change in my mouth	142
Finding/ selecting a dentist or dental clinic	49
Preparing for a dentist's consultation	62
Being diagnosed with a dental condition not familiar to me	42
Being prescribed with a new medication, test, or treatment	33
Having doubts about information given by my dentist	49
Dealing with an ongoing dental problem	88
Deciding to change my behaviors/ daily routine (e.g. diet, quit smoking)	43
Hearing or seeing something in the news that you wanted to learn more about	91
For knowledge or curiosity	110
Others (please specify):	2

As found in our study, a total of 131 or 35.7% of the respondents did discuss with their dentist, the information that they found online. Whereas 191 or 52% of the respondents did not discuss with their dentist regarding the online information they found (Table 3).

**Table 3:** Discussing Dental Health Information with Dentist.

	Respondent's answer	N=322 Frequencies	Percentage
Discussing with dentist about dental health	Yes	131	35.7
	No	191	52
	Total	322	87.7

Based on the Table 4, the respondents have a mean score of 28.7 in terms of the positivity of their perception towards online dental health information.

**Table 4:** Patient's Perception towards Online Dental Information.

N	Valid	319
	Missing	48
	Mean	28.8621
	Median	29
	Mode	27
	Std. Deviation	7.15021
	Range	36
	Minimum	9
	Maximum	45

The number of respondents who use the internet in the <35 years age group was 136 whereas only 44 people in the age group of 36-75 years had used the internet. The two means were subjected to a t-Test to find out if there existed any significant difference between them Table 5a.

**Table 5a:** Means of Use of Internet of Age Groups <35 and 36-75.

Age (years)	N	Usage (%)
<35	136	37.1
36-75	44	12

According to the Table 5b, the  $p$  value obtained is 0.000. It is evident that there is a clear significant difference between the two age groups.

**Table 5b:** t-test of use of internet score between the <35 years and the 36-75 years age group.

t	df	Sig. (p value)
-3.977	178	0

## Discussion

### Number of patients who use the internet for seeking dental health information.

From our study's findings it is indicated that 73% of patients used the internet for seeking online dental information. It is noteworthy that such a high percentage of PIDC patients are internet savvy. This implies that there is a great potential of the Internet as an important channel for health information and support for the general population.

### Reasons for seeking health information online

Table 2 depicts the reasons for seeking health information online. It must be admitted that patients may have multiple reasons to check online dental resources. The table shows that most of them (142% or 38.7%) went online because they had some dental problems. Sillence [4] found that an increasing number of people (especially women) turned to the Internet for health advice, and then combined online advice with offline advice from friends, family and doctors in order to be confident in their final decision. In fact, according to Sillence [4], women believe that the Internet influences their decision-making and improves communication with doctors [5].

### Discussing dental health information with dentist

Table 3 shows that a total of 131 or 35.7% of the respondents did discuss with their dentist, the information that they found online. In the early days, because dentists were only a source of information about the health of patients, they used to have confidence in dentists and usually followed their recommendations. However,

the situation has now changed, and patients can also use the Internet to obtain health-related information and to evaluate the dentist's recommendations for diseases. A study conducted by Ball and Lillis found similar results. A study conducted by Chestnutt and Reynolds found different results. Despite using the Internet, most patients still believe that dentists are the most reliable source of oral health information.

### Patient's perception towards online dental information

Based on Table 4 above, the respondents have a mean score of 28.7 in terms of the positivity of their perception towards online dental health information. The mean score of 28.7 works out to 64.1% when computed against the maximum possible mean. Thus, the respondents' perception towards online health information is sufficiently positivity. According to Chestnutt, Ivor and Reynolds, K. in their examination, discovered that patients who looked for online data were generally better informed and in fact information on the Internet has influenced and enhanced the delivery of oral care. They also found that the internet was an asset and not a threat to the dentist-patient relationship. The internet information had actually led to patients demanding inappropriate care or more complex treatment.

#### (a) Means of use of internet of age groups <35 and 36-75

#### (b) t-Test of use of internet score between the <35 years and the 36-75 years age group

Table 5 shows the existence of a significant difference between the use of internet for online dental health information seeking aged less than 35 and those aged between 36-75 years old. The age group of less than 35 have a higher online dental information seeking score. It was established that, age certainly impacts the online dental information seeking score clearly indicating that advancing age may mean a reduced inclination of searching dental health information online. The difference between the younger and the older group was subject to a t-Test, to find out if the difference was minimal and negligible. However, the results indicated that the difference was significant.

### Relationship between age and the frequency of internet use

As shown in Table 6 there is a strong negative correlation between the frequency of use of the internet to seek online dental information and the age, ( $r=-0.524$ ,  $p<0.05$ ). This means that the frequency of use of the internet to seek online dental information has an inverse relationship with age. Higher age corresponds with lower frequency of internet use and vice versa. Clearly the younger respondents have a higher frequency of internet use and this would certainly translate into a higher rate of online dental information seeking.

**Table 6:** Relationship between age and the frequency of internet use.

N=365		Age	Frequency of Internet Use
Age	Pearson Correlation	1	-0.524*
	Sig. (2-tailed)		0
Frequency of Internet Use	Pearson Correlation	-0.524*	1
	Sig. (2-tailed)	0	

As can be seen from the table above, alpha ( $\rho$  value) is less than 0.05, and the Pearson 'r' value is -0.524.

## Conclusion

The Internet has great potential to affect health and wellness. By providing information about health and wellness services and supporting self-help and patient choice, it can and most definitely will increasingly be used to educate and enhance public capabilities. Overall, participants showed awareness of potential issues related to online health information searches. The findings of this study point to a series of barriers to online health information between patients and doctors and factors

that facilitate communication. This study emphasizes the need to enhance patients' communication skills, eHealth literacy assessments, and targeted resources to enable individuals to obtain high-quality and reliable online health information, and to remind patients of the importance of consulting medical professionals when using online health diagnosis and resources for treating health problems. The use of the Internet by practitioners needs to be promoted and developed to maximize its potential benefits to patients.

## Perception & behavior of PIDC patients towards Online Dental Health Information Seeking

We would like to ask for your opinion and your experience of using the Internet for health-related information. There are no right or wrong answers, choose an answer that suits you the most.

Please check the appropriate answers, or write your answers in the spaces provided:

Can you tell us some basic information about yourself?

1. **Age**

- 18-25       26-35       36-45       46-55       56-65       66-75

2. **Gender**

- Male       Female

3. **Occupational status**

- Full-time employment       Part-time employment       Self-employed  
 Full-time student       Part-time student       Unemployed  
 Retired      Others(please specify):

4. **Do you use the Internet?**

- Yes       No

If NO, Thank you, this is the end of the survey.

## 5. How often do you use Internet?

- Once a year or less       Every few months       Once a month       Several times a week  
 Several times a month       Once a week       Everyday

## 6. Have you ever used Internet to find dental health related information?

- Yes       No

If NO, Thank you, this is the end of the survey.

## 7. How often do you use Internet to find dental health information?

- Once a year or less       Every few months       Once a month       Several times a month  
 Once a week       Several times a week       Everyday

## 8. Did you find the dental health information for... (Please check all that apply)

- Myself       Friends/Co-workers       Family members

Please specify:

## 9. Which tool did you use to look for dental health information online? (Please check all that apply)

- Desktop computer       Laptop computer       Tablet       Smartphone

## 10. What kind of dental health information have you ever found online? (Please check all that apply)

- Symptom       Disease/ Condition       Service info (e.g. dentist, dental clinic)  
 Medication       Test/ Investigation       Treatment and procedure  
 Chinese medicine       Alternative medicine       Vitamins and supplements  
 Health insurance       Healthy behaviors (e.g. diet, quit smoking)

Others(please specify):

## 11. Why did you find dental health information online? (Please check all that apply)

- Noticing new symptoms or change in my mouth  
 Finding/ selecting a dentist or dental clinic  
 Preparing for a dentist's consultation  
 Being diagnosed with a dental condition not familiar to me  
 Being prescribed with a new medication, test, or treatment  
 Having doubts about information given by my dentist  
 Dealing with an ongoing dental problem  
 Deciding to change my behaviors/ daily routine (e.g. diet, quit smoking)  
 Hearing or seeing something in the news that you wanted to learn more about  
 For knowledge or curiosity  
 Others (please specify):

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12. **On which websites did you find the dental health information?** *(Please check all that apply)*

- |  |   |
|--|---|
| <input type="checkbox"/> University  | <input type="checkbox"/> Online encyclopedia (e.g. Wikipedia)   |
| <input type="checkbox"/> Government  | <input type="checkbox"/> Q&A site (e.g. Yahoo! Answers, Baidu Knows)                                    |
| <input type="checkbox"/> Hospital/ clinic  | <input type="checkbox"/> Internet forum/ message board  |
| <input type="checkbox"/> Non-profit organization   | <input type="checkbox"/> Social media (e.g. Facebook, Twitter)  |
| <input type="checkbox"/> Commercial site (e.g. drug/ formula milk/<br>personal care products manufacturer) | <input type="checkbox"/> Health portal/ medical encyclopedia (e.g. MIMS,<br>PubMed, MedlinePlus, WebMD) |
| <input type="checkbox"/> News site   | <input type="checkbox"/> Video-sharing site (e.g. YouTube)  |
| <input type="checkbox"/> Blog  | Others (please specify): <input type="text"/>   |
- 

13. **Why did you choose those websites to find the dental health information?** *(Please check all that apply)*

- |   |   |                                      |
|---|---|--------------------------------------|
| <input type="checkbox"/> Recommended by specialists       | <input type="checkbox"/> Easy to understand       | <input type="checkbox"/> Usual habit |
| <input type="checkbox"/> Recommended by family or friends | <input type="checkbox"/> I think it's trustworthy | <input type="checkbox"/> Convenience |
| <input type="checkbox"/> Top results from search engines  | <input type="checkbox"/> Others (please specify): |                                      |



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14. **Did you ever ask or discuss with your dentist about the dental health?**

 Yes No


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15. **Did you ever share with your dentist regarding dental health information found online?** (e.g. by email/ print-out/ photos or screenshot on smartphone)

 Yes No

16. **Did you ever ask or discuss with your dentist about specific oral disease or diagnosis because of the dental health information found online?**

 Yes No

17. **Did you ever ask or discuss with your dentist about specific treatment, tests or referral because of the dental health information found online?**

 Yes No

18. Was your dentist interested in hearing about the dental health information you found online?

 Very interested Not at all interested Slightly interested Don't know/ Can't remember

19. For the following statements, please tick '✓' the responses that best reflect your opinion and experience now.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
(a) I know <b>what</b> dental health resources are available on the Internet.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) I know <b>where</b> to find helpful dental health resources on the Internet.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) I know <b>how</b> to find helpful dental health resources on the Internet.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) I know <b>how to use</b> the Internet to answer my questions about dental health.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) I know how to use <b>the dental health information</b> I find on the Internet to help me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f) I have the skills I need to <b>evaluate</b> the dental health resources I find on the Internet.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g) I can tell <b>high quality</b> dental health resources from <b>low quality</b> dental health resources on the Internet.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h) I feel <b>confident</b> in using information from the Internet to make dental health decisions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i) I <b>trust</b> the online information more than my dentist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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