

# SEARCHING AND USING ONLINE MEDICAL INFORMATION AMONG MOTHERS OF INFANTS IN HANOI, 2019

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*The aim of this study was to identify the factors related to searching and using online medical information among mothers of infants. This was a cross-section study of 219 mothers at 2 vaccination centers of Hanoi Medical University in Vietnam. Subjects were surveyed by a set of direct interview questions. More than half of the subjects were under 30 years old [(Mean = 30.16; SD = 4.06)]. Almost all participants did not agree with discussing health issues in online forums; if they had health issues, they felt the need to seek help from a doctor via message on Facebook or Zalo. Mothers wanted to discuss with doctors, professionals, friends, and relatives on online media; they were confident that they could find useful online information to make medical decisions. Factors related to finding and using online medical information included the following: age, ethnicity, employment (public officers), education level, income, and whether infant was first child or not. Health care professionals should support mothers to make medical decisions by communicating with patients as much as possible, provide reliable medical information for patients, and introduce them how to find accurate, comprehensive and understandable online medical information*

**Keywords:** decision making; help-seeking behavior; internet.

## I. INTRODUCTION

Infants always need attention and care from their family, especially their parents. Infants' development depends a lot on their parents so that the shortcoming of medical information affects infants' physical and mental development and perfection.

Medical information is obtained from either online or offline sources. Previously, medical information were mainly obtained from the media or people who know health issues in the community.<sup>1</sup> However, the internet now is a common tool, providing necessary

medical, disease management, and prevention information for the patient.<sup>2</sup>

For parents who have infants, finding information mainly from public health nursing or laymen resources such as relatives and friends who are healthcare professionals; another way, family and internet are the uncommon sources. Information sources used by parents include doctors (92%), leaflets of patient information (PILs) (34%), public health nurses, or school health workers (34%) and pharmacists (78%).<sup>3</sup> The more variety in information sources, the more difficult of managing and selecting quality information.

In Vietnam, some research has concentrated on modeling ways of providing information for families regarding young people and adolescents but not for infants. As medical

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information sources continue to expand the way people communicate, people are more likely to find and access health information themselves. When the number of information sources increase exponentially, the quality of information is not always guaranteed to be high quality. Parents can now easily access online and offline sources of information, including information that is not moderated. Access to unofficial information from parents can have serious consequences for a child's health. Therefore, we have conducted this study to describe factors related to finding and using online medical information of infants' mother in Hanoi in 2019.

## II. METHODS

### 1. Study design and study population

*Study design:* This is a cross-sectional study, which recruited 219 mothers who have infants from two vaccination centers of Hanoi Medical

University. Subjects were surveyed by a set of direct interview questions. The convenience sampling method was applied in this study. Selection criteria: Mothers with infants able to communicate and answer interviews; using a smartphone, tablet, and searching tools; live in Hanoi. Exclusion criteria: Study subjects are infants' fathers and grandparents.

*Sample size:* Apply a sample size calculation formula to estimate 1 ratio 4:

$$n = Z_{(1-\frac{\alpha}{2})}^2 \cdot \frac{p \cdot (p-1)}{(p \cdot \varepsilon) \cdot 2}$$

Where:

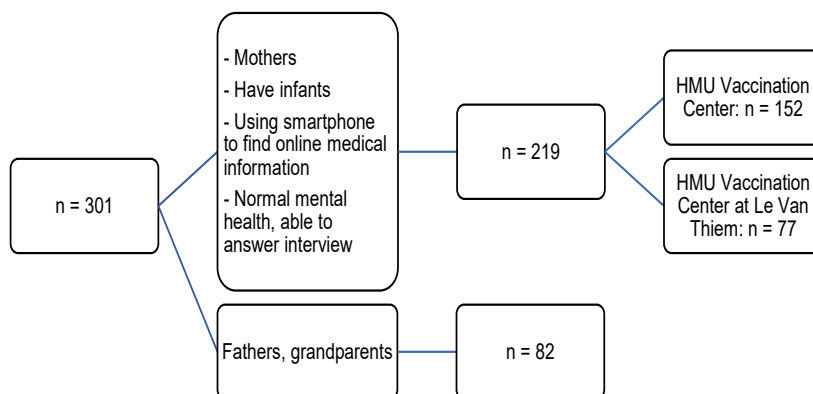
n: required sample size of the study.

p: 1.96

-  $Z_{1-\alpha/2}^2$ : reliability coefficients.

-  $\varepsilon$ : The expected deviation between the sample parameter and the population parameter.

From the formula on  $n = 300$



### 2. Set of questionnaire

The research question set was divided into 2 sections:

- The demographic section included questions about age, ethnicity, employment, education level, income, first child or not.

- Second section content asked about accessing online medical information. Questions were extracted from the reference

questionnaire, "Health Information Obtained from the Internet and Changes in Medical Decision Making: Questionnaire Development and Cross - Sectional Survey." Written by Yen - Yuan Chen, it is comprised of 3 parts, 14 total multiple choice questions about searching for online medical information<sup>5</sup>. There are also 8 multiple - choice questions dealing with rating the use of medical information. The questions

use a “Likert 5 scale”. The question set have Cronbach alpha > 0.8 so it has highly reliable.

### 3. Data analysis plan

Statistical analyses were performed by R studio statistical software. Study variables immediately after data collection were entered, processed, and described as median percentages used to characterize demographic characteristics. Box Plots are used to describe the reality of searching and using online medical information. Linear regression between total score variable using online medical information and demographic characteristics of study

subjects and total points for online medical information search. The result is statistically significant with p - value < 0.05.

### 4. Ethical Considerations

The study proceeded with consent and support of the vaccination centers of Hanoi Medical University. Subjects agreed to participate voluntarily after understanding the purpose of the study and keeping their personal information anonymous. Results were used for research only. The study ensured that it did not affect the rights, health, and economy of the study subjects.

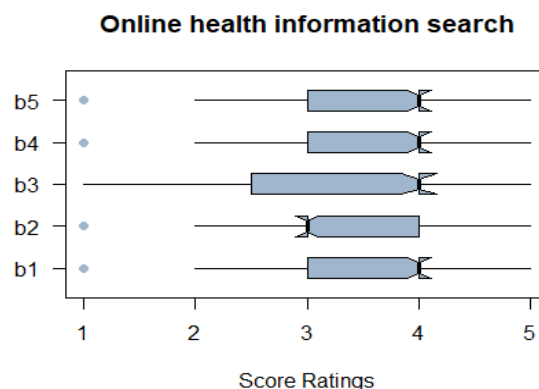
## III. RESULTS

### 1. Demographic characteristics

**Table 1. Characteristics of mothers (n = 219)**

Demographic		n	%
Age	< = 30	124	56.6%
	> 30	95	43.4%
	Mean (SD)	30.16 (4.06)	
Ethnicity	Kinh	212	96.8%
	Other	7	3.2%
Public officials	Yes	137	62.6%
	No	82	37.4%
University education level	Yes	207	94.5%
	No	12	5.5%
Income	>= 10 million VND	83	37.9%
	< 10 million VND	136	62.1%
First child	Yes	115	52.5%
	No	104	47.5%

The majority of research subjects were under 30 years old (56.65%). Most the subjects were Kinh people (96.8%). Most had completed education at the university level or higher (94.5%), and the majority of the currently employed were public officers (62.6%). The study subjects with their first child accounted for 52.5% of the sample, and the income of the majority of the study subjects was below 10 million VND (62.1%).



*\*Online medical information*

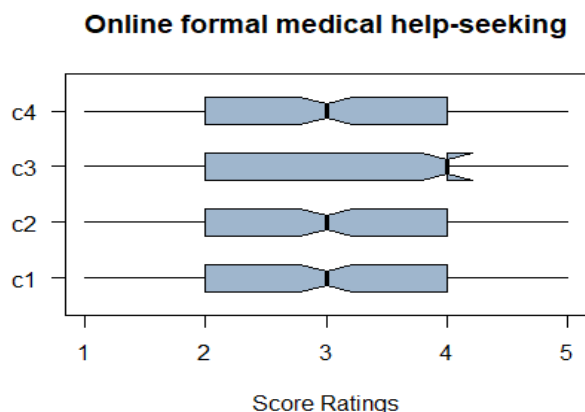
*B1. When I have a medical problem, I will search for solutions using internet search engines (e.g., Google, Yahoo).*

*B2. When I have a medical problem, I will search for solutions from online discussion forums (e.g., medical - related online forum, bulletin board system (BBS)).*

*B3. When I have a medical problem, I will search for solutions from the websites of social media platforms and social networking services (e.g., Facebook, Twitter).*

*B4. When I have a medical problem, I will search for solutions from medical websites (hospital websites, hospital e - newspapers).*

*B5. When I have a medical problem, I will search for solutions from doctors' websites.*



*\*Online formal medical help - seeking*

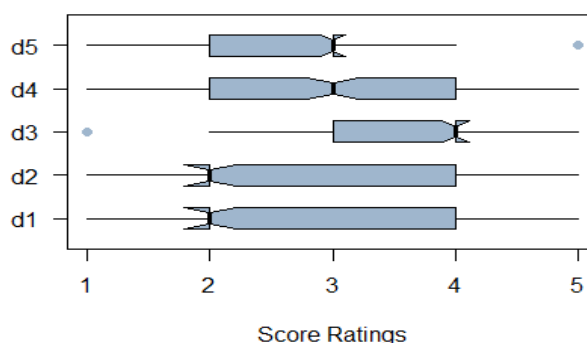
*C1. When I can't solve a medical problem, I will e - mail a doctor, medical expert or health care professional to seek medical help.*

*C2. When I have a medical problem that I don't understand, I will post a request on internet medical forums for help from doctors, other health care professionals, or medical experts.*

*C3. When I have a medical problem, I will seek help from doctors or other health care professionals using Instant Messages (e.g., Facebook, Zalo).*

*C4. When I have a medical problem, I will try to seek help from websites or online blogs maintained by doctors or health care institutions.*

### Online informal medical help-seeking



\*Online informal m

D1. When I have a medical problem, I will post a message on relevant web forums requesting help from other forum users.

D2. When I can't solve a medical problem, I will seek help from others using my microblog (e.g., Facebook or Twitter).

D3. When I have a medical problem, I will seek help from friends, colleagues or netizens using Instant Messages (e.g., Facebook, Zalo).

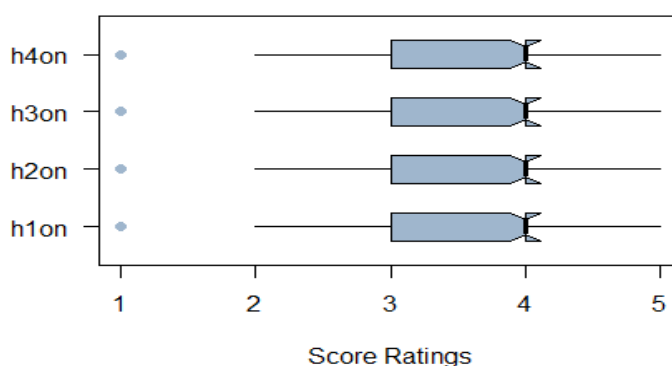
D4. When I have a medical problem, I will post the problem on relevant websites of knowledge communities (e.g., Facebook) and try to find a solution.

D5. When I have a medical problem, I will post the problem on a proper website, medical - related online forums or bulletin board system (BBS).

**Figure 1. The score searching online medical information (n = 219)**

The first chart of Figure 1 shows that in searching for online medical information, most mothers do not agree with searching online forums or online forums related to the medical or bulletin board system (BBS). With searching for formal online medical information, if subjects have health issues, most mothers agree that they should seek help from doctors or healthcare professionals via messages on Facebook or Zalo. And when searching for informal online medical information, mothers wanted to get help from friends, relatives, colleagues via messages on Facebook or Zalo. With this figure, the box plots show that most mothers want to get information or help from their family, friends, relatives or doctor via messages from social networks or from the Internet. Based on the data, subjects used smartphone more than 2 - 3 hours a day. It seems that searching for online medical information is convenient, so the tendency of searching for online medical information is increasing.

### Consulting others



*\*Consulting others*

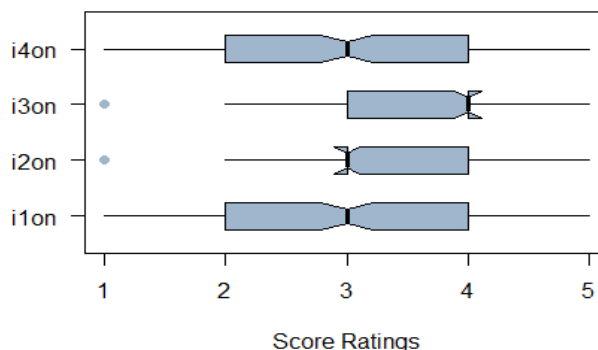
*H1on. Online health information is an important reference for me when making medical decisions*

*H2on. I will discuss relevant issues with a doctor based on the health information on the Internet*

*H3on. I will discuss relevant issues with my family or friends based on the health information on the Internet.*

*H4on. I will discuss relevant issues with experts based on health information on the Internet.*

**Promoting self-efficacy**



*\*Promoting self - efficacy*

*I1on. I am confident that I can evaluate the accuracy of online medical information for making medical decisions.*

*I2on. I am confident that I can make good use of online medical information*

*I3on. I am confident that I can find useful online health information.*

*I4on. I am confident that I can make correct medical judgments on personal medical issues based on online medical information.*

**Figure 2. The score using online information (n = 219)**

The second chart shows that in the “Consulting others” section of questions, mothers agree with discussing health issues via online media. In the last field of “Promoting self - efficacy”, the majority of mothers feel confident that they can search for useful medical information to make medical decisions via online media. From this figure, the tendency of mothers was to communicate with others by messaging applications and social networks; they believed that the information from the Internet has highly reliable, so they were confident that the information they found was useful.

**Table 2. Factors associated with the total score of using online information (n = 219)**

Factor	Estimate	SE	p - value	95% CI	
				Lower	Upper
Age	0.21	0.09	< .001	1.04	1.47
Ethnicity (Kinh vs Others)	1.29	1.71	< .001	0.13	104.00
Public officials (Yes vs No)	- 0.72	0.66	< .001	0.14	1.77
University education level (Yes vs No)	0.19	1.38	< .001	0.08	18.00

Factor	Estimate	SE	p - value	95% CI	
				Lower	Upper
Income $\geq$ 10 million VND (Yes vs No)	- 0.34	0.63	< .001	0.21	2.47
First child (Yes vs No)	0.58	0.70	< .001	0.45	7.03
Total searching score	0.25	0.04	< .001	1.19	1.37

The linear regression model shows the factors affecting the use of online health information, including age, ethnicity, occupation (in particular, officials and employees), qualifications education at the university level or higher, the income is over 10 million VND / month or not, whether the child is the first child or not.

#### IV. DISCUSSION

Online medical information - seeking behavior is a priority of mothers when they have health issues with different levels. Mothers can search for online medical information from any source.. Infants are a special group of children; in this age group, all healthcare decisions are made by the caregiver, especially mothers.<sup>4</sup> The results of this study show some factors affecting the use of online health information, including age, ethnicity, occupation (in particular, officials and employees), qualifications education at the university level or higher, the income is over 10 million VND / month or not, whether the child is the first child or not, are statistically significant.

The median age of study subjects is 30.16, in which mothers younger than 30 years old (56.6%) tend to search for information online less than mothers younger than 30 years old (4.34%) because they have two or more children, with raising experience; or maybe they prefer to believe the doctor advise than the online medical information; meanwhile, they do not regularly use the internet or search for medical information on the internet. From Aida Buanco's research in Italy, the study of parents (under 40 years old) show that younger parents searched for medical information online more often than older parents<sup>6</sup>. The subjects of this

study are parents whose median age is 41.2 (18 to 50 years old); this is different from our study. Kavalak O, who looked at pregnant mothers' online searches for information, show the same factors that the mothers between the ages of 25 and 34 years old prefer to search for information more than the other mothers (  $\geq$  35 or 18 – 24 years old).<sup>7</sup> The research on mothers with small children in Norway proved that age does not affect the need to find information on their subjects.<sup>8</sup> There are clear differences between our study and their research due to the political and economic characteristics between the two countries, and the educational level between the two research groups.<sup>9</sup>

The second factor is ethnicity. Most of the study subjects were Kinh people (96.8%). The result shows that ethnicity does not affect the search for medical information of study subjects because maybe there are some study subjects are people of different ethnicities who were born and live in Hanoi city. However, due to their culture, they may be inclined to use old - fashioned methods to cure illnesses, or use transmitted remedies instead of seeking information from online sources. We cannot compare our research to other research because research from outside Vietnam often look at different populations of different ethnicities.



Even in Vietnam, few studies in Vietnam have put ethnicity as a factor influencing the search for information online.

The next factor is occupation. The study subjects who work as public officials is not a tendency to search for online information. And they have enough knowledge to know that the medical information on the internet is not moderated so that when they have health issues, they prefer to meet with doctors, healthcare professionals, or speak with their family and friends instead of spending their time to find and determine whether online information is reliable or not. The research of parents in Italy does not show a link between the occupation and the need to search for online medical information by the internet, which clearly shows the difference from our study.<sup>6</sup>

There are two other factors: education level and number of children already raised by the subject. The research at Norway showed that the education levels and the number of children do not influence the search of online medical information,<sup>8</sup> which is completely different from this study when the mothers' education is higher, the greater the need to find them, mothers with two or more children have more experience in child care mothers have one child. Once they have experience in caring for their first child, they often have appropriate solutions to make medical decisions without any additional information and they believe those decisions are right for their children.. Differences in the two studies may be caused by the target population as the study in Norway focused on mothers with ill children. In YY Chen's research, the main factor affected to the search of online medical information and making medical decisions is the education levels, the author pointed out that a large number of people seeking health information online are highly educated<sup>5</sup>. The similarities can be explained in the Asian region, influenced by the customs,

virtues of Vietnamese and Taiwanese alike. The last factor is the study subjects' income. Our study showed that mothers who have the income higher than 10 million Vietnamese dong (vnd) per month chose to bring their child to doctors for information on their health issues. Mothers with incomes below 10 million vnd often found medical solutions and information to fit the expenses they can afford. This is similar to the study by Guerra - Reyes L,<sup>10</sup> which demonstrated that the Internet is the main source of information for low - income women after childbirth. In our study, we show that there are 3 most influential factors, their age, occupation, and income. This is evidenced by the Table 2. Factor associated with the total score of using online information (n = 219) with age (95% CI 1.04 – 1.47), occupation (95% CI 0.14 – 1.77) and the income (95% CI 0.21 – 2.47), and all of the factors have the 95% CI does not pass 0, and have short fluctuation range.

The limitation of the study is the cross - sectional study design because the study time is limited, so we stop using convenient sampling methods, narrow study areas. Therefore, we have introduced a limitation that is interviewing a gender, thereby ensuring the information is homogeneous and highly reliable.

## V. CONCLUSION

Our research shows that almost all mothers want to get information from the Internet, though they prefer to communicate with doctors, professional healthcare or their friends, relatives, and family by online messages and social networks. They are also confident that they can get useful medical information from the Internet, though much of it is not moderated. There were 6 factors influencing the use of online medical information: age, ethnicity, occupation, qualifications education level, and income. From there, we provided methods to



help mothers over the age of 30 years old to easily access and search health information such as organizing training sessions on how to use electronic devices to find. Searching and providing a list of official and reputable online health information sources for mothers to have the most reliable sources to find and use information in child care, and finally, we can create applications, links that help mothers feel easy to use to find the necessary health information.

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