# Understanding Users' Perception on the Trustworthiness of Online Health Information

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Abstract: The evaluation of online health information, i.e. its reliability, credibility, trustworthiness, etc., plays a significant role in the users' judging and health behaviour change process. Related works haven't come to a consensus on the framework of trust formation process. Nor much attention has been paid to one of the most active groups of online information users, the youth. This study, from the young people's perspective, examines the perception and judgment on the trustworthiness towards online health information. To test the design and reveal deficiencies of the study and procedure before time and resources are expended on large-scale studies, a pilot study was designed and conducted. Then semi-structured interviews were employed involving students from two groups: university freshman and the seniors respectively. The preliminary results cover: the exploration of their health information seeking process, factor analysis towards trustworthiness of online health information, the perceptions on HON measures and related health information literacy.

## 1 INTRODUCTION

The assessment of online health information, i.e. its reliability, credibility, trustworthiness, etc., influences greatly the users' judging and health behavior change process. Related works haven't come to a consensus on the framework of trust formation process. It has been revealed that credibility is a key impact factor of trust formation; influencing users' trust judgement and health behaviour change eventually (Everard and Galletta, 2005, Rowley et al., 2015). Other work indicated that trust and credibility are two concepts overlapped, since they share same sub-domains, i.e. brand, content, usefulness, style, while considering constructing an assessment framework (Fogg et al., 2003, Rowley et al., 2015).

Nor much attention has been paid to one of the most active groups of online information users, the youth. Young people have been recognized as one of the most active groups of the Internet users in China (China Internet Network Information Center, 2016). According to China Internet Network Information Center (CNNIC), there were approximately 688 million Internet users in China by 2015, among which 36.4% (around 224 million) were young people (aged between 10 to 24). Though probably they are supposed to have comprehensive surfing skills and have extensive Internet experience, they still have difficulty in evaluating the quality of online information, especially health information (Gray et al., 2005, Dobransky and Hargittai, 2012).

This study, from the young people's perspective, particularly examines the perception and judgment towards trustworthiness of online health information, which then will help to explore their health information behaviour. The core questions are designed include: If the youth are capable of judging the quality of online health information? What are their processes of trust formation towards online health information? What factors influence positively or negatively their acceptance and use of online health information? The rest of the paper is organized as follows: explanations of methods and materials utilized during data collection and data analysis process; preliminary analysis results from the qualitative study, consisting of a pilot study and semi-structured interviews; end with a discussion.

# 2 METHODS AND MATERIALS

The methods of the ongoing work are designed including of a pilot study and semi-structured interviews. Young people's perception and judgment towards the trustworthiness of online health information are investigated utilizing searching experiment and follow-up interviews. Volunteered participants, aged between 18 to 24, were employed in the Peking University (China) to take part in the investigation. The participants were asked to firstly attend 30 minutes long session to search for information within a given health field. Each participant should provide concurrent protocols as they search the Internet for health information. Meanwhile, a numerical scale, from one to ten, will be provided to them to score the trustworthiness of the searching results. Then a brief interview is followed to explore the rational on how they allocate scores for the trustworthiness of each result (Yu, 2016).

## 2.1 Related Measures

Evaluation tools are available to assess online health information, and previous studies have used generic tools, i.e., HON code, to examine the quality of web-based healthcare information (Harland, 2007; Hsu W-C, 2008; Kim, 1999). The Health On the Net Foundation (HON) (www.healthonnet.org) promotes and guides the deployment of useful and reliable online health information, and its appropriate and efficient use. The purpose of HON code is to protect all from incorrect, indeed misleading medical and health information. With this intention, HON accredits web sites according to eight ethical principles: 1) from which authority the information is coming from; 2) what is the purpose of the site; 3) the confidentiality policy; 4) the origin of the sources used; 5) the justification about benefits and performance of a specific treatment; 6) the transparency of the authorship; 7) the transparency of sponsorship as well as honesty in advertising; 8) editorial policies. The user's perceptions on those selected measures are investigated in this study as well.

## 2.2 Data Collection

The qualitative data are collected from both the pilot study and interviews. A pilot study was conducted to reveal deficiencies in the design of the study and procedure before time and resources are expended on large-scale studies. The participant approached was a senior university student who was interviewed about basic information about online health information search and trustworthiness judgement. Questions that were not answered as expected were re-worded or re-scaled; time that taken to complete the session was recorded to decide whether it is reasonable; ambiguities in questions were identified and clarified.

Then semi-structured interviews were conducted involving students from two groups: university freshman and the seniors respectively. The recorded interviews were transcribed by one the research team and then crosschecked by another member. The preliminary results were analysed utilizing content-based analysis that will be discussed in the next section in greater details.

## 2.3 Data Analysis

The data collected from both the pilot study and the interviews were recorded and transcribed with permission from the participants for further analysis.

One concern is that of contamination of data. This may arise from either where data from the pilot study are included in the main results or where pilot participants are included in the main study, but new data are collected from these people (van Teijlingen and Hundley, 2001). It is believed that contamination is less of a concern in qualitative research, where researchers often use some or all of their pilot data as part of the main study. Some have therefore argued that in qualitative approaches separate pilot studies are not necessary (Holloway, 1997). Frankland and Bloor (Frankland and Bloor, 1999) indicated that piloting provides the qualitative researcher with a "clear definition of the focus of the study" which in turn helps the researcher to concentrate data collection on a narrow spectrum of projected analytical topics. Therefore, data from the pilot study was included in the overall analysis.

The interpretation and analysis of the data employed content-based thematic analysis that involved classifying and coding the content into themes. An explanation of the codebook used is as shown in Table 1, including the code, theme and their corresponding explanations. The main themes formed from the data include: the health information seeking process, perception on HON measures, health information literacy, factor analysis on trustworthiness etc.

Table 1: Codebook.

| Code | Theme | Explanation |
|------|-------|-------------|
| IS | Credible information source | Health websites, hospital websites, question and answer community |
| IP | Credible information provider | Large public hospitals, doctors from famous hospitals |
| CI | Credible information | Disease symptoms, appointment information, hospital and department ranks, misunderstands of information |
| NI | Not credible information | Recommended medicine, recommended therapy |
| NF | Not credible factor | Advertisement |
| AA | Active acquisition | Hospitals and departments |
| PA | Passive acquisition | Pushing articles |
| TF | Information trust formation | Information from authority consistently |

# 3 PRELIMINARY RESULTS

Basing on both related theories and the previous findings, the preliminary results from the qualitative data are categorized into the following themes:

- Exploration of their health information seeking process;
- Their perception on HON measures and related health information literacy;
- Factor analysis towards trustworthiness of online health information.

## 3.1 Health Information Seeking Process

As shown in Figure 1, the participant actively seeks for health information when a health related issue occurred, or they passively received pushed information from well-known information sources, such as top websites or official organizations. The take-for-granted trust on experts and large public hospitals arguably affects young people's assessment of credibility of online health information, and excludes other information sources such as private sectors.

They tend to believe the health information immediately as long as they are from large hospitals with good reputation (i.e. Three grade hospital in China), or the online health information were provided by the physicians who have been working in those large hospitals.

*"The most credible website is hospital website."*

*"Large hospitals hired these doctors have verified their professionalism."*

*"That information is provided by professional doctors and it can't impact my health."*
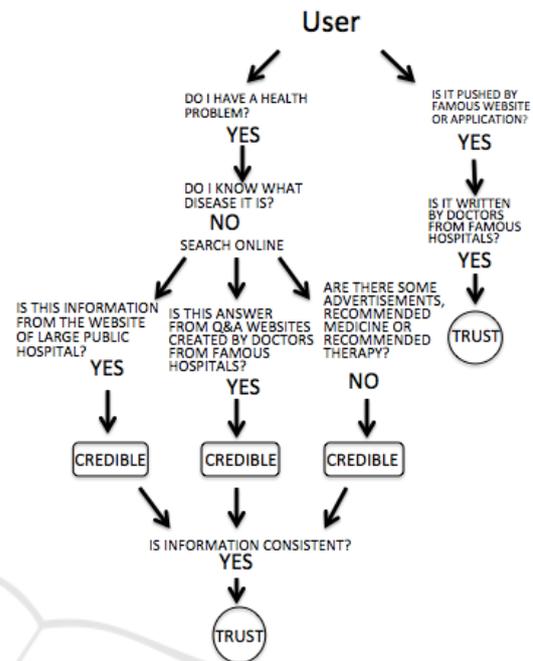


Figure 1: Health information seeking process.

## 3.2 Perceptions on HON Measures

Not very surprisingly, nearly all of the participants have not heard of the HON code measures previously due to their health information literacy limitations. On the other hand, the HON code has been well established in the western world prior its translation into Chinese languages. Regarding to the detailed eight measures that forming the HON's ethical principles; the authority, the purpose, confidentiality and the frequency of the occurrence of advertisement could have affected their judgement and perception towards the online health information's credibility. Moreover, senior students showed capability of more sophisticated information literacy and willingness to explore complicated measures for online health information.

*"If I suffer from health problems which I can't solve with common sense, I must go to the hospital. I don't trust commercial recommendations."*

*"Heavy advertisements are for profit only. They may exaggerate the issues."*

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### 3.3 Factor Analysis on Trustworthiness

Young people pay more attention to well-known healthcare providers. They tend to neglect the content or design of health information. Therefore, their take-for-granted trust on the experts affects the youth's choices greatly.

Figure 2 and Figure 3 summarized the subdomains of two important factors, "trust" and "credibility", from related studies.

"Trust/trustworthiness" and "credibility" have been identified as two factors that affect each other, which therefore confused the formation of trustworthiness towards online health information and the define of those two concepts. Nevertheless, other factors, such as brand, content, verification, style, design look, authority, expertise, real-world feel, are identified as factors for the youth to decide the trustworthiness towards online health information.
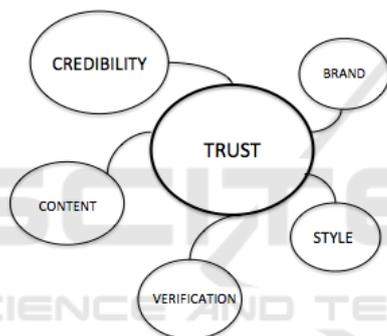


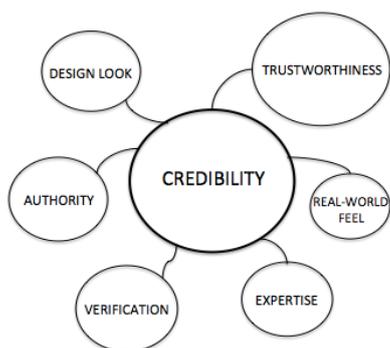Figure 2: Subdomains of "Trust".



Figure 3: Subdomains of "credibility".

*"I read these articles carefully because they are filtered by editors who should be responsible."*

*"I use Internet to search what the disease is and which hospital and department I should go to."*

*"When I browse the information I get from search engine, all of them are consistent."*

## 4 DISCUSSION

The preliminary findings from our work is summarized as following:

- The participants paid more attention to the trustworthy information providers, i.e. leading hospitals, doctors and web editors, which contribute to the credibility of health information.
- The take-for-granted trust on experts and large public hospitals arguably affects young people's assessment of credibility of online health information, and excludes other information sources such as private sectors.
- The lack of provision of health information from well-known organizations and consumers' deficiency in health information literacy restricts the health information seeking and utilizing behaviour.

Sillence et al. (2007) noted that the design and content of information were major impact factors within the dimension that users utilized to assess the credibility of online health information. The reason behind this difference between previous study and ours will be investigated in future large-scale studies. In addition, the result of pilot study indicated that when conducting searching experiment, the task should be set about a common symptom which young people are more likely to suffer from. The active acquisition and passive acquisition should also be taken into consideration to augment the research methodologies.

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