Content Analysis on User-Focused Support Features of Health Support Sites for Geriatric Depression

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Abstract—With the unique characteristics of anonymity and non-physical interaction, the Internet has provided numerous depression support sites that can enable older people with stigmatized illness to seek for health information and acquire social support effectively. However, few studies have been conducted to evaluate the sites on user-focused support features for geriatric depression. Hence, in this paper, we report a study using content analysis with a hybrid coding approach to systematically analyze and assess the usefulness and usability of 60 depression-related sites worldwide, with 27 Asia-based and 33 Western-based. The intention of the study was to determine the benefits of these sites for geriatric depression. We formulated a research tool, a checklist of user-focused support features, critical to the effectiveness of depression sites in four aspects – purposes, information quality, interactivity and accessibility. Findings have reflected an overall high coverage of depression information in the sites in general description (93.3%), causes (76.7%), symptoms (90.0%) and treatment (88.3%), although most of them were not elderly-focused. New forms of “patient-to-helper” and “patient-to-patient” interaction types were observed in the sites with high social media involvement, yet more assistant features need to be introduced in order to address elderly users’ physical and cognitive problems. Western sites were more likely to be depression-focused, while Asian sites have higher percentage of features for assisting elderly. We believe the findings will benefit web developers and healthcare researchers in building depression sites with higher quality and user experience for elderly users.

Keywords-Geriatric depression; Website content analysis; Human factor feature

I. INTRODUCTION

Depression is perhaps the most prevalent mental disorder in later life, which significantly decreases the life quality in senior citizens [1, 2], and becomes a risk factor for suicide [3, 4]. Due to the growing number and percentage of elderly among the whole population in a modern society, the well-being of older adults with geriatric depression has become a public health concern in many countries [5]. Report from the National Alliance on Mental Illness has indicated that depression affects more than 6.5 million of the 35 million Americans aged 65 or older [6]. Despite the availability of efficacious treatments for depression, reports show that the stigma attached to mental illness has negatively influenced patient’s help-seeking intentions [e.g. 7, 8]. This stigma can keep elderly people from acknowledging that they are depressed, refusing to discuss with physicians or other health professionals face-to-face, and finally result in inadequate treatment in depression [8]. Recent decades have witnessed the increased public use of the Internet and web-based services, which lead to unprecedented access to information online in every domain of human life [9]. In the healthcare domain, Internet has provided new forms of effective online support services for health promotion, health communication and health education. The unique characteristics of online health support services such as greater anonymity & privacy, reduced importance of physical appearance & physical distance, and greater individual control over the time and pace of interactions [10] – have enabled people with stigmatized illness to seek for health information and acquire social support. Research on Internet support groups have also shown that depressive patients have turned to online support services for help in understanding and dealing with symptoms [11]. More Internet users are also reported to search the Web for information on depression than any other health condition [12].

There is an increasing population of elderly users in Internet. According to National Institute on Aging [13], people over 60 years now become one of the fastest growing groups of Internet users. A survey of U.S. households also reported that 42% of those who are 65 years and older are using Internet-based services [14]. As Internet provides a convenient, anonymous means of obtaining information and reduces the stigma attached to depression, it is not surprising that more and more online support sites are established with the aim to benefit elderly depression patients by providing self-seeking health information and social supports. Since the depression sites now play an important role in helping the depression treatment of elderly patients and directly associate with their well-being, the usefulness and usability of these sites have become significant concerns for both the site developers and users. Currently, there are neither systematic guides to depression websites on which developers can base their advice, nor studies done on the user-focused features regarding to their usefulness and usability. Consequently, it would have practical significance to investigate whether the depression sites address the special needs of elderly users from the human factor perspective.
Hence, the current study intends to:

- Provide an overview of the online depression sites in different regions along with the cultural differences among their design features;
- Identify the indicators for assessing the user-focused support features in the depression sites for elderly users;
- Evaluate the usefulness and usability of the depression sites for elderly users through content analysis; and
- Provide recommendations for the development of effective support sites for geriatric depression.

II. STUDIES ON HEALTH SUPPORT WEBSITES

Considering the amount of health information disseminated through the Internet and their role on public health promotion, the study on health support websites has become an ever-expanding area in health informatics [15]. Due to the significance of health information quality, most of the current studies focus on investigating the trustfulness of the site contents. Ostry et al. [16] analyzed the quality of nutritional health content from eight Canadian health websites, with the main guideline published by Canadian Food Guide. Petch [15] conducted an exploratory study on health websites from Canada, U.K. and Australia, to understand the inclusiveness of the information provided by various producers. On the other hand, there are also some studies focus on the usability aspect of the health websites, such as [17], which examines the interactivity in public health websites in the Palliative Care.

Among various studies on health support sites, the study by Lissman & Boehnlein [18] was the first attempt to formally evaluate the quality of depression information on the Internet. Following that, Griffiths & Christensen [19] used a cross-sectional survey in order to determine both the quality and accessibility of the content in 15 Australian depression websites. Nimrod’s study [10] focused on 25 leading online depression communities and explored the potential benefits these communities offer to people with depression.

Nevertheless, to our knowledge, although more and more attention is paid in understanding elderly’s usage of Internet in accessing healthcare information [20], there is no existing study on evaluating depression-related sites in terms of the elderly users. Elderly patients’ needs for depression information and support are different from that of other groups [1]. Besides, due to the physical and cognitive changes in late life, the way elderly users interact with the health sites is also different from other groups of users [21]. As a result, it reflects a research gap on evaluating the usefulness and usability of the depression sites particularly for elderly users. Moreover, the above literature review have indicated that many of the current studies have only focused on assessing the website within a certain regions, there is a lack of a comprehensive study on worldwide depression sites, in order to provide a meaningful overview of the features in different regions of the world.

III. METHODOLOGY

Content analysis of depression support sites was conducted in order to assess their usefulness and usability for elderly depression users. Content analysis is an established social science methodology concerned broadly with "the objective, systematic, and quantitative description of the content of communication" [22]. This research method has four key advantages indicated by Krippendorff [23] which make it suitable for website analysis [15]: unobtrusive, flexible, context sensitive, and applicability to large amounts of data. In fact, content analysis now has been employed increasingly in the analysis of World Wide Web [24]. As the current study aims to assess user-focused support features in depression sites, we mainly adopted one specific type of content analysis, Conceptual Analysis, in the evaluation process. The focus of Conceptual Analysis is to examine the occurrence of selected terms within a text or texts, although the terms may be implicit as well as explicit [25]. In the paper, we examined the presence of the indicators identified in each of the selected depression sites, in order to assess their usefulness and usability for elderly users.

A. Selection of sites

The first step in developing a methodology for this inquiry was to decide on the samples. The current study investigated depression support sites from different regions of the world in order to increase the representativeness of selected samples. With a purpose to reveal cultural impact on the user-focused features, we included sites from both Western and Asian regions. Due to the limited time and effort, only those from main developed English-speaking countries (e.g. U.S and U.K) or Asian countries with traditional culture were involved in the selection process.

To identify potential depression sites for the content analysis, we adapted the selection method used by Griffiths & Christensen [19, 26] which aims to identify “popular” international depression sites: we used main search engines from different countries and regions\(^1\) to conduct searches for about half a month (from late-January to mid-February 2013) by entering the query term “elderly depression” or its translations in different languages\(^2\) Only sites appearing in the top 50 results of a search engine list and containing at least five internal web pages focusing on depression were included. The sites were excluded if they are: 1) No longer active or accessible; 2) Not relevant to major depression (for example, only concerned solely with seasonal affective disorder, bipolar disorder or postnatal depression); and 3) Not providing self-seeking healthcare information for patients (for example, only news section, book review or

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1 Google (www.google.com) was used for all regions, while special search engines were also applied in some different regions: Baidu (www.baidu.com) for China (mainland) and Hong Kong; Yahoo TW (tw.yahoo.com) for Taiwan; Rediff (www.rediff.com) for India; Naver (www.naver.com) and Nate (www.nate.com) for South Korea; AOL (www.aol.com) for U.S.A. and U.K.; Anzwers (www.anzwers.com.au) for Australia and New Zealand;

2 In Chinese: “老年抑郁” (for Mainland China) or “老年抑郁” (for Taiwan and Hong Kong); In Korea: “노인 우울”; In Malay: “kemunungan tua”.

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A total of 60 sites were selected for the formal content analysis. 27 sites initially came from the Asian regions while 33 from Western regions. Table I shows the detailed profiles of the selected online depression sites. Each site was given a unique ID which is used in the following sessions of the paper. For example, the first site ‘Hao Dafu Zaixian’ from China was identified as ‘CN1’ (see Table I).

### TABLE I. PROFILES OF THE SELECTED DEPRESSION SITES

<table>
<thead>
<tr>
<th>Region</th>
<th>ID</th>
<th>Site Name</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>China (Mainland)</td>
<td>CN1</td>
<td>Hao Dafu Zaixian</td>
<td><a href="http://www.haodf.com">http://www.haodf.com</a></td>
</tr>
<tr>
<td></td>
<td>CN4</td>
<td>120Ask</td>
<td><a href="http://www.120ask.com">http://www.120ask.com</a></td>
</tr>
<tr>
<td>Taiwan</td>
<td>TW1</td>
<td>Taiwan Association Against Depression</td>
<td><a href="http://www.depression.org.tw">http://www.depression.org.tw</a></td>
</tr>
<tr>
<td></td>
<td>TW3</td>
<td>ETMH</td>
<td><a href="http://www.etmh.org">http://www.etmh.org</a></td>
</tr>
<tr>
<td>Malaysia</td>
<td>MY1</td>
<td>Your web doc</td>
<td><a href="http://msyourwebdoc.com/depression">http://msyourwebdoc.com/depression</a></td>
</tr>
<tr>
<td></td>
<td>MY2</td>
<td>Malaysian Psychiatric Association</td>
<td><a href="http://www.psychiatry-malaysia.org">http://www.psychiatry-malaysia.org</a></td>
</tr>
<tr>
<td>South Korea</td>
<td>SK1</td>
<td>Catholic Univ. of Korea Yeouido St. Mary’s Hospital</td>
<td>[<a href="http://blog.naver.com/cmcsung/0">http://blog.naver.com/cmcsung/0</a> Redirect=Log&amp;logNo=8016619825](<a href="http://blog.naver.com/cmcsung/0">http://blog.naver.com/cmcsung/0</a> Redirect=Log&amp;logNo=8016619825)</td>
</tr>
<tr>
<td></td>
<td>SK2</td>
<td>KDI</td>
<td><a href="http://www.mykdi.co.kr/c/c7.html">http://www.mykdi.co.kr/c/c7.html</a></td>
</tr>
<tr>
<td></td>
<td>SK3</td>
<td>Clinical Research centre for depression</td>
<td><a href="http://www.smileagain.or.kr">http://www.smileagain.or.kr</a></td>
</tr>
<tr>
<td></td>
<td>SK4</td>
<td>Naver Kin</td>
<td><a href="http://kin.naver.com">http://kin.naver.com</a></td>
</tr>
<tr>
<td>Hong Kong</td>
<td>HK1</td>
<td>Smart patient</td>
<td><a href="http://www21.ha.or.kr/smartpatient">http://www21.ha.or.kr/smartpatient</a></td>
</tr>
<tr>
<td></td>
<td>HK3</td>
<td>eElderly</td>
<td><a href="https://www.q123.hk/CareGiver/illness/344">https://www.q123.hk/CareGiver/illness/344</a></td>
</tr>
<tr>
<td></td>
<td>HK4</td>
<td>Institute of Mental Health Castle Peak Hospital</td>
<td><a href="http://www3.ha.org.hk/ceph/mh/article_02_02_03.aspx#1">http://www3.ha.org.hk/ceph/mh/article_02_02_03.aspx#1</a></td>
</tr>
<tr>
<td></td>
<td>SG3</td>
<td>Healthymind.sg</td>
<td><a href="http://www.healthymind.sg">http://www.healthymind.sg</a></td>
</tr>
<tr>
<td>India</td>
<td>IN1</td>
<td>MedIndia</td>
<td><a href="http://www.medindia.net">http://www.medindia.net</a></td>
</tr>
<tr>
<td></td>
<td>IN2</td>
<td>MedWonders</td>
<td><a href="http://www.medwonders.com/support-groups/depression">http://www.medwonders.com/support-groups/depression</a></td>
</tr>
<tr>
<td>U.K.</td>
<td>UK1</td>
<td>Depression Learning Path</td>
<td><a href="http://www.clinical-depression.co.uk">http://www.clinical-depression.co.uk</a></td>
</tr>
<tr>
<td></td>
<td>UK2</td>
<td>Depression</td>
<td><a href="http://www.depressionalliance.org">http://www.depressionalliance.org</a></td>
</tr>
</tbody>
</table>

#### B. Indicators for user-focused support features assessment

Based on similar content analysis studies on health websites evaluations [15, 19, 26], four main categories of indicators on both usefulness and usability aspects were identified for assessing user-focused support features in the current content analysis. They are Purpose(s) of the sites, Information quality, Interactivity and Accessibility for elderly. We describe as follows the usefulness and usability indicators.

**Usefulness indicators:**
1) Purpose(s) of the sites

Although all the selected sites are depression-related, they may vary in different purposes (for example, offering health information only or providing peer communication only), which lead to different Focuses and Formats. The purpose(s) of a website reflects the Target Disease and Audience, functions supported by the site, as well as the exclusions. It contributes to the understanding of how the authors of the site offer depression supports in terms of content, mean, scope, and even tone. Besides, in the content analysis, we are also interested in investigating whether the sites contain Health Promotion for Business purpose.

2) Information quality

As much of the content on the Internet is not policed by any governing body or required to adhere to any ethical regulations [27], information provided from them might be incomplete, misleading, or incorrect. As a result, it is important to assess the quality of available information from the sites, particularly for the healthcare sites which directly associate with the users’ well-being. For the depression support sites, the Coverage and Richness of the depression information determine the benefit, users can achieve by visiting them. Griffiths & Christensen [19] had conducted a cross-sectional survey of 15 Australian depression websites to investigate whether they provide most included information such as Descriptions of prevalence and risk factors, Symptoms and Diagnosis, Treatment, Prevention and so on. Besides, the accuracy and credibility of health information offered via the Internet is another major concern in terms of the information quality in health support sites [28]. Consequently, Information Validation also takes up much weight in the assessment of information quality in depression sites.

Usability indicators:

3) Interactivity

Characteristically different from traditional inquiry done through physicians or self-help health books (sparsely used), Internet-based health sites provide multiple Interaction Types for inquiry of health information and support that are catered to the users’ particular needs. Apart from displaying the static information, some depression sites also provide options for facilitating interactions between users and physicians and also between users themselves, with features such as bulletin board, chat room, online counseling and even psychotherapy [19]. In addition, Social Media Involvement of the sites is also considered to be an emerging feature for increasing the interactivity in web-based information sharing. These digitally interactive channels in the Internet-based health services permit “communicators to deliver highly tailored messages and receive feedback from the intended audience” [29].

4) Accessibility for elderly

Accessibility is the attribute of being easy to meet or deal with the sites for all users, regardless of expertise, personality, literacy, ethnicity, and disability, and so forth [30]. For older web users, the functional impairments, especially the visual and cognitive impairment, have negative impact on their web interaction. A study by Hart [31] highlighted that access would be hampered for elderly users with reduced vision and cognition, if a website fails to provide large & highly contrasted text, and backward & forward navigation aids. In order to address the problem, there are quite a few ageing-centered web design guidelines established to make healthcare sites more usable for elderly visitors regarding the Navigability, Font and Help Instruction [e.g. 32, 33]. The indicators in accessibility help to determine whether or not the selected sites had taken measures to increase the ease of use and understanding of the individual sites.

C. Data analysis and reliability

After having decided on the four main categories of indicators for the content analysis, a pilot study of five selected sites (CN1 & 2, US1, AU1, NZ1) was conducted by using a bottom-up coding strategy, to identify the potential sub-indicators in each category of the four main indicators. A few more sub-indicators were added during the formal coding process of the rest sites. We formulated a checklist of the indicators for content analysis as seen Table II. After all of the depression sites were coded, the researcher organized the data into a tabular format, in order to highlight the commonalities and differences between the various regions, as well as the individual sites.

To enhance the reliability of the results, two coders who are proficiency in both English and Mandarin (both are PhD students majored in information studies, have rich experience in coding process) separately coded the selected websites. Each coder re-coded the web site (on the same day) to ensure that data collected was accurate and complete. The inter-coder reliability is 0.873, which indicates the two coders have high agreements in the coding process. The final coding results were achieved after the discussion of the differences between the two coders.

IV. FINDINGS

The major format of the 60 depression sites was website (85%) which displays self-seeking information that cover basic aspects of depression, while a small number of them (10%) were forums for peer-to-peer discussion. They had high accessibility for general users, with some of them providing special assistant features for elderly users. The analysis of the research findings is organized under four main categories based on the indicators on usefulness and usability, which has been summarized in Table II.

A. Purpose(s) of the sites

From the prevalent format of depression support sites in the content analysis, it is clear that the purposes of majority of the current sites were to provide the individual patients...
with health information about depression and relevant services from support groups and organizations. Nevertheless, it has been noted that some sites have not limited their content to one specific area, but rather focused on a variety of purposes. Aware (UK9), Blue Page (AU3) and WebMD (US1) are some of examples which offer health information and health communication by integrating the patient discussion forum into their websites. It is also interesting to find that two Asian sites with user-generated contents (CN9 and SK4) were used for medical information seeking, even though they did not claim specialization in medical information and might have low authority in information quality.

Table II. The Checklist for Assessment

<table>
<thead>
<tr>
<th>Categories</th>
<th>Indicators</th>
<th>Sub-indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose(s) of the site</td>
<td>Format</td>
<td>Website, Blog, Forum (Chatroom), Others</td>
</tr>
<tr>
<td></td>
<td>Target Disease</td>
<td>Depression focus, Depression and related mental illness, General illness</td>
</tr>
<tr>
<td></td>
<td>Target Audience</td>
<td>Elderly focus, General with elderly specific page, General without elderly specific page</td>
</tr>
<tr>
<td></td>
<td>Business Promotion</td>
<td>Advertising/Selling a own product/service, Advertising/Selling others’ product/service</td>
</tr>
<tr>
<td>Usefulness</td>
<td>Information Coverage &amp; Richness</td>
<td>General description &amp; facts, Cause, Symptoms, Prevention, Treatment, Emergency contact number, Information for caregivers, Link to external articles/news/information, Link to external services/ websites/organizations, Others help information</td>
</tr>
<tr>
<td></td>
<td>Information Validation</td>
<td>Authors of resource, Citations, Expert/Visitor rating, Certificated by standard organizations/ authority</td>
</tr>
<tr>
<td></td>
<td>Interaction Types</td>
<td>Patient-to-information, Patient-to-helper, Patient-to-patient</td>
</tr>
<tr>
<td></td>
<td>Accessibility</td>
<td>Navigability, Link to homepage on every page, Title on each page</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Language, Single, Multiple</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specific assistance for elderly, Changeable font size, Alternative to text-based information, Others</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Search Feature, Help Instructions</td>
</tr>
</tbody>
</table>

Figure 1. Percentages of the selected sites in different target diseases

Although all the sites are depression-related, only 40% of them are strictly depression-focused, which means that the rest also aims for other relevant mental illness or even general illness. Compared with the Asian regions (29.6% of the sites are depression-focused), Western regions (45.5% are depression-focused) are more likely to have support sites that only target on depression users (see Figure 1). In terms of the target audience, only two of the sites (HK3 and US6) are highlighted to be elderly-focused, even though both of them are intended for general healthcare. Although none of the sites was initially established for only coping with geriatric depression in the study sample, twenty-eight out of the sixty sites include special internal page(s) that were related to elderly patients with depression. Figure 2 shows the percentages of sites for different groups of target disease(s).

Figure 2. Percentages of the selected sites in different target audiences

Besides offering free health information for public, a small number of sites were found to contain business promotions. They were advertising relevant hospital services, medications, and even own brochure & Lapel Pin (in US9) aiming to encourage depression patients.

B. Information quality

Regarding the content coverage, high percentage of the selected sites provide large scope and breadth of depression information on general description and facts (93.3%), different causes (76.7%), diagnosis and symptoms (90.0%) and relevant treatments (88.3%). Figure 3 shows the information coverage and richness of the selected sites. The high occurrence rate of these components reflects the key information that users are concerned with, when they browse these sites. Information about depression prevention, in contrast, is recorded to be less frequently present in the support sites: only 31.7% of them provide advice on ways to
avoid depression in daily life. Interestingly, there is a larger
number of sites containing prevention information in Asian
regions (55.6%) rather than Western regions (12.1%).

![Figure 3. Percentages of the selected sites which cover the different
aspects of depression information](image)

As depression is considered to be highly associated with
suicide, it is not surprising to see that 24 sites offered
hotlines for emergency and urgent contact, with some sites
offering a conspicuous place on the interface for the
information (see Figure 4). Apart from the health
information for patients themselves, quite a few sites (25
sites) also introduce useful tips for caregivers and educate
them to look after their depression patients. In order to
enhance the facilitation and assistance for the users, it is
important to note that over 70% of the selected sites share
links to alternative health services or organizations where
users could seek for additional help as well. Some sites also
provided external links to other information, such as current
news, recommended books and articles about depression. In
addition to the above information, there are special help
services found to increase the usefulness of sites. Singhealth
(SG2), for instance, contains searching feature to help users
to find a doctor nearby and process the appointment booking
within the site. Medline Plus (US5) is another example that
provides online interactive tutorial for depression education.

Information validation appears to be a popular element to
include on depression support sites. More than a half (55%)
of the sample in the study contains at least one of the four
means of validation: providing Authors of the resource,
Citation or reference, Expert/visitor rating, and Certification
by standard organizations. Among them, providing Authors
of the resource achieves the highest prevalence in the sites
(35.0%). Cultural impacts are seen in the preference of the
information validation: higher percentages of Western sites
use Citation and Certification by standard organizations than
Asian ones.

![Figure 4. Hotline offered in the interface (from UK5)](image)

C. Interactivity

Abiding by the main purpose of the depression support
sites, the main interaction type found in the study is patient-
to-information: users are expected to gain depression
information from the screen which was organized by the site
producers. Complementary to this traditional interaction type,
patient-to-patient interaction is becoming another popular
interaction type in depression support sites. 43.3% of the
selected sites provide various platforms (forum, chatroom,
patient-to-patient comments) for patients to discuss their
experience, exchange information and seek for social support.
Patient-to-helper is another emerging interaction type that 16
of the selected sites have employed (see Figure 5). In these
sites, depression patients can interact with the health
professionals, such as therapists and trained volunteers, via
online chatting or email inquiry.

Social media involvement is an obvious feature of
interactivity found in a big number of the sites. 60% of the
samples have demonstrated the usage of social media to
share information and connect with other users (example of
social media involvement in depression sites can be seen in
Figure 6). More interestingly, some sites also involve the
usage of mobile applications to increase the interactivity
between users and sites. No significant difference is
identified in the social media involvement between Asian
sites (59.3%) and Western sites (60.6%).
D. Accessibility for elderly

All the sites have good performance in navigability in the content analysis study: with the exception of Catholic Univ. of Korea Yeouido St. Mary’s Hospital (SK1), all the sites had a navigation toolbar that is accessible in all pages. They also provided a title in each page to reflect its content, and a homepage link to increase the ease of use. 73.3% of sites contain a search feature which allows user to locate the detail information as per their need. Even though more than 70% of the sites only offer single language for their local users, there are totally fifteen multi-language sites, with some of them (Royal College of Psychiatrists (UK8) and Medline Plus (US5)) providing more than 15 different languages. It would be interesting to note that there are slightly more multi-language sites in Western regions (27.3%) than in Asian regions (22.2%), although the difference is not significant.

Besides the basic navigational characteristics that are quite common to other web sites, some special features of accessibility were found in some of the selected sites which facilitate older users. For instance, in order to address the visual problems of the elderly users, 26.7% of the sites allow users to change the font size according to their need, while one site (US6) even provides option for changing interface contrast. 20.0% of the sites contain video or audio materials that are alternative to text-based information, aiming to enhance the attractiveness and readability of the content for elderly users who may have low levels of literacy. Considering elderly’s poor knowledge of computer, 12 sites provided help instruction feature to educate users on how to operate the websites, with two examples shown in Figure 7. For example, a New Zealand depression support site (NZ2) has some virtual navigators in the interface to explain how to navigate for elderly users.

V. DISCUSSION AND RECOMMENDATIONS

According to the above findings, some key issues have been highlighted that help to contribute to the future practice and research in the development of online support sites for geriatric depression:

A. Need to paying attention to elderly users

Based on the findings, it is clear that more attention needs to be drawn towards elderly users in depression-focused sites. For example, only 2 out of 60 sites whose target users were older adults, while half of the rest had no any special information for geriatric depression. There would be inadequate help and support provided for older site users with geriatric depression, even though online support sites were considered to be beneficial in increasing the depression patients’ self-seeking intentions [10]. Adding systematic information of geriatric depression into the site content will be a practical solution to meet the need for elderly patient with depression stigma, also to further address the increasing concern of the mental health of the elderly with depression [5]. Another observation is that a majority of sites focus on the users suffering from depression while being less attuned to users who need to look after the patients. Now that the physical and mental burden of caregivers for depression patients have been highlighted in some studies [34, 35], it would be beneficial to add more tips and support for caregivers in the sites and prepare them well for living with elderly depression patients.

More support features are also needed to be included in order to address the special demands from elderly web users. In the content analysis, several human factor designs (changeable font size, virtual navigators) have been identified in some sites to assist elderly users in seeking information and help, however, the percentage of these sites is still very low among the overall samples size (with less than 30% of the samples). Therefore, the establishment of the elderly-focused design features will be important improvements for many of the current depression sites where high accessibility is anticipated.

B. Social media involvement as a future trend

Social media has now become an emerging medium for increasing online information sharing and communication
[36], it is not surprising to see that three-fifths of the selected depression sites have included this certain feature to encourage health information sharing between users. As social media can reduce importance of physical appearance and physical distance, users with stigmatized illness – such as depression – are more willing to discuss the illness, and even stories or experience of living with it with their peers. As a result, social media has potential to create a sphere not only for knowledge exchange, but also for getting inspiration and social support for depression coping. It would be worthwhile for future research to investigate the actual impact of social media involvement in health sites on the well-being of people with depression, such as levels of depression, attitudes toward their condition, perceived support and satisfaction with life.

C. Cultural impact on depression sites

In the study, the percentage of support sites which at least include individual page(s) targeted on elderly was observed to be slightly higher in Asian regions than Western regions, particularly in those influenced by Chinese culture, i.e. Taiwan (100%), Hong Kong (75%), China (66.7%) and South Korea (50%). It is probably attributed to the Chinese culture which holds great importance on caring for the elderly [37]. Consequently, there are more Asian sites that provide changeable font size in their interface in order to facilitate elderly’s usage. The higher levels of social support among older people in Asian countries in fact also lead to the less attention to the mental illness, which can be reflected from the lower percentage of depression-focused sites in Asian regions. Another contributor to the few depression-focused Asian sites might be the negation of depression in Asian culture, as what Mjelde-Mossey et al. [38] suggested, holding onto “tradition was found to be negatively associated with depression and thus [became] a protective factor” (p. 24) against depression.

VI. LIMITATIONS OF THE STUDY

There are some limitations in the study. First, the purpose of research tool used in the content analysis, checklist, was to determine whether a certain feature was available or not in the selected sites, rather than to quantify how much, or to what extent, each site presents the feature. As a result, it limited the data analysis in reflecting and comparing the quality of the user-focused support features in selected sites. For the future revised checklist, we will record the quantity of information on some indicators, such as the depression causes and treatments, to improve it for reflecting the difference in the quantities of them. Additionally, the checklist is not an ideal universal tool for analyzing all kinds of sites. While it is effective in capturing the information in websites, the checklist becomes problematic in terms of analyzing discussion forums. As the depression information in the discussion forums are not systematically presented, they were not included in the feature ‘information richness’, even though they do help users in understanding depression. The modification on the revised checklist will help to capture feature details on the discussion forums.

Lastly, the study sample size is not big enough. However, in this exploratory study, research findings are not necessarily representative of, nor generalizable to depression sites around the world. We aim to present a preliminary overview of the current support sites for geriatric depression.

VII. CONCLUSION

The study presents a content analysis that systematically analyzes the usefulness and usability of 60 depression-related sites worldwide. As increased attention is paid on older adults’ usage of Internet for accessing healthcare information, the study serves as the first attempt to investigate overall understanding of their user-focused support features – purposes, information quality, interactivity and accessibility – in depression sites for elderly users. The contributions of the study are two-fold. First, by revealing the basic facts, gaps and cultural impacts of the sites’ support for elderly users, the findings have made practical contribution in inspiring web developers and designers to redesign the user-focused features in health websites, in order to enhance the quality and user experience in online healthcare information seeking. Second, regarding theoretic contribution, the study has built up a primary framework for assessing the user-focused support features in healthcare websites for elderly users, and also demonstrated the future research direction on investigating the impact of social media involvement of the depression sites on the well-being of the elderly users.

REFERENCES


