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Adherence to medication interventions: Following attending physicians or online support?

Completed Research Paper

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Abstract

Medication interventions are clinical interventions that delay or prevent the recurrence. In this research, we built upon the social network theory (SNT) to examine how trust in attending physicians and different sources of online social support would affect patients' adherence to medication interventions. We conducted a mixed-method approach for different types of target populations. An online survey involving 311 patients with recent hospitalization experience was conducted, and the results confirmed that accessing support from online professionals made patients deviate from the medication interventions. Besides, patients' trust in ability of their attending physicians would promote the adherence behaviors. Considering more senior patients, we conducted ten in-depth interviews to obtain further insight into patients' dilemmas and challenges in integrating eHealth platforms into their treatment. This research contributes to the existing literature by revealing the potential problems in eHealth platform development and operation, in integrating the eHealth platform with physical healthcare systems.

Keywords: Medication interventions, structural social support, trust, patients, attending physicians

Introduction

Medication interventions are clinical interventions that delay or prevent the recurrence through taking medication (Gillies and Abrams 2007). In practice, medication interventions are fully prescribed by physicians during hospitalization, according to the treatment plan and patient's physiological characteristics. Studies have reported that adhering to medication interventions is more valuable to patients than developing new treatments (Brown et al. 2016). Patients who do not adhere to medication interventions may lead to relatively serious consequences, such as worsening diseases, deaths, and continued economic costs (Lee et al. 2017; Sletvold et al. 2020).

In practice, overwhelmed with the volume of patients and facing sheer knowledge gaps, physicians have great challenges in ensuring patients grasp the rationale of prescribed medication treatment, which is usually an overly complex condition to be understood by patients. Without sufficient professional

knowledge, patients have few choices but to accept physicians' advice passively. To what extent do patients trust the physicians' decisions are likely to affect their adherence behaviors, as trust is an important mechanism to alleviate the negative impact of uncertainty within medical conditions.

However, lacking patient-physician trust is a global problem, particularly in countries with limited medical resources. An existing study has shown that 27% percent of patients did not trust their attending physicians in Australia; this figure increased to 40% and 42% in Japan and the United States, respectively (Huang et al. 2018). In China, this problem is more severe, and a previous study reported 70% of patients did not trust their attending physicians in 2016 (Zhao et al. 2016).

The increasing availability of medical information on various social media platforms adds more complexity. With the fast growth of eHealth platforms, online healthcare services could provide more entrances for patients to establish social relationships with professionals and other patients sharing similar experiences (Pluye et al. 2019). Although designed with the expectation of enhancing the self-management of healthcare, such online platforms also have a compelling motivation to serve as a soft marketing platform for healthcare businesses. Patients are likely to expose to disparate and persuasive medical advice from those prescribed by their physicians online. Unlike other users of online eHealth platforms, discharged patients who experienced clinical treatment from their attending physicians will face inconsistency advice online. This may lead to a tradeoff between adhering to their physicians or taking online advice. Therefore, it is necessary to examine the potential "dark side" of such health platforms following social network theory (SNT).

Based on SNT, we tried to examine how trust in attending physicians and different sources of online structural social support would affect patients' adherence to medication interventions. We conducted a mixed-method approach for different types of target populations. An online survey involving 311 patients with recent hospitalization experience was conducted, and the results confirmed that accessing support from online professionals made patients deviate from the medication interventions. At the same time, patients' trust in the ability of the attending physicians may improve the patient's adherence. Further, we conducted ten in-depth interviews to obtain further insight into patients' dilemmas and challenges in integrating eHealth platforms into their treatment. This research contributes to the existing literature by revealing the potential problems in eHealth platform development and operation, particularly from patients' perspectives, in integrating the eHealth platform with physical healthcare systems.

In the following sessions, we will first discuss the theoretical foundation of the research, followed by hypothesis development. Then we will report the empirical studies and discuss the results. The paper is concluded with a discussion of research contributions to both literature and practices.

Social Network Theory & Structural Social Support

SNT holds that social networks are composed of nodes (individuals or groups) and social relations among these nodes (Scott 1988). People usually have different kinds of social links (strong and weak) to other individuals in their social networks. Strong ties are characterized by deep affinities, such as close friends and families; weak ties link people with others they do not know very well, such as acquaintances and strangers. Further, people's friends and families usually tend to move in the same social circles as they do, making it difficult for new and unknown information to emerge (Granovetter 2018). People usually acquire or exchange novel information through weak rather than strong relationships (Granovetter 2018).

Based on SNT, social support refers to subjective and objective support (emotional, material, or informational) a person has received from a supportive network (Hall et al. 2019). Functional social support concerns resources of social support to meet one's needs, such as informational and emotional support (Rutter et al. 2020). Another social support, structural support, focuses on the sources of support individuals may access. Examples are the number of supportive contacts a person can obtain, the types of social networks, and the frequency of communication (Kahle et al. 2020). This study concerned much about the second type of social support. In the field of health, structural social support can be divided into formal (from health professionals, such as healthcare workers) and informal social support (from family, friends, and others) (Rickwood et al. 2015; Nakamura et al. 2020).

Social support can help patients deal with their health and emotional impairments, such as stopping patients from self-blame for health problems and enabling self-help (Yan & Tan 2014). When patients are discharged from the hospitals, they need to rebuild their health behaviors, including medication behaviors,

by themselves. Besides the information from the attending physicians, patients would face fewer challenges with additional social support.

With the development of the Internet, eHealth platforms provide widely accessible social support provided by registered professionals and patient users. In general, establishing new relationships (weak ties) online is a low-cost way to solve problems (Eysenbach et al. 2004; Laranjo et al. 2015). Existing research has also provided evidence about the positive side of such online social support, e.g., emotional support to deal with stressful conditions, reducing the feeling of isolation, enhancing self-control, increasing self-confidence, reducing depression and anxiety, and expediting health recovery (Feeney & Collins 2015). Meanwhile, online social support was also found to help patients change their behaviors and thus adjust their disease status (DeHoff et al. 2016). As patients have less opportunity to receive continuous support from their attending physicians, obtaining online social support is the alternative way to alleviate these health problems for patients (Eysenbach et al. 2004).

Considering the clinical treatment experience during hospitalization, we tried to understand the impact of online structural social support generated by the untrusting of attending physicians on discharged patients' medication intervention adherence prescribed by attending physicians after discharge. In this situation, the structural social support may provide new self-management information inconsistency with attending physicians, leading to a tradeoff between adhering to their physicians or taking online advice.

Despite the overwhelming evidence to support the positive impact of such online platforms, we are intrigued to explore the possible "dark side". While such new relationships constructed online can provide patients with novel information and solutions, such information or solutions may not be consistent with the prescribed medication interventions provided by their attending physicians.

Hypotheses Development

This study aims to explore the impact of two online structural social supports on adherence to medication interventions prescribed by the attending physicians, namely, online professional support and peer support. First, accessing online professional support from physicians is increasingly popular among patients, such as the patient's involvement in health consultation through online healthcare communities. Nowadays, some healthcare service providers attempt to provide consistent clinical interventions for patients from hospitalization to discharge. However, these attempts still showed problems to be solved, such as privacy concerns and difficulty in managing middle-aged and elderly patient users. The reality contributes to the fact that discharged patients could only access online professional support from unfamiliar physicians other than their attending physicians. Consistently with these phenomena, this study tried to understand the role of online professional support from physicians who provide treatment that differs from their attending physicians. Second, discharged patients can receive informal social support from other patients suffering from the same or similar diseases, namely online peer support. Online peer support can provide more matched emotional or informational support to discharged patients.

In this session, we will discuss the research model. We argue that the extent to which patients trust their attending physicians affects their reliance on online social support. Since online social support usually cannot have complete information about the patient, it is more likely the information obtained from online social support is different from the prescription by the attending physicians, leading to interference with medication intervention. Such competing and interference effects may be further strengthened when the online platforms enjoy high source credibility.

Impact of Trust on Adherence

Patients usually have to accept medication interventions passively rather than participate in the prescribing processes (Ylä-Rautio et al. 2020). Discharged patients have to suffer from the side effects of drugs without basic medication information. Therefore, patients' trust in their attending physicians, who provide medication treatment, plays an essential role in conducting medication behaviors after hospitalization. Existing studies have shown that losing trust in physicians leads to poor adherence to medication interventions for the discharged patient (Cuevas et al. 2016). Meanwhile, those who trust physicians will also adhere to medication intervention (Brown et al. 2016).

Combined with doctor-patient interactions assuming that patients can benefit from their doctors, this study adopted the trusting belief to separate patient-physician trust dimensions, which refers to the thought that the truster can be benefited from the trusted person (McKnight et al. 2002). Two trust dimensions were applied in this study, namely, trust in ability (emphasizing the competence of the trusted person to meet the needs of the truster) and trust in integrity (emphasizing the moral level of the trusted person, such as how reliable the trusted person is and what extent to stand in the position of the truster). When patients have high trust in the attending doctor's ability during hospitalization, patients would agree with the accuracy of medication intervention prescribed by doctors and thus adhere to medication intervention. When patients had high trust in the honesty and trustworthiness of the attending doctor during hospitalization, patients would think that the doctor's decision was beneficial to themselves and thus adhere to medication intervention. We proposed the following hypotheses.

H1a: Patients' trust in the ability of attending physicians during hospitalization positively affects their adherence to medication intervention after discharge.

H1b: Patients' trust in the integrity of attending physicians during hospitalization positively affects their adherence to medication intervention after discharge.

Role of Online Social Support

When patients lack trust in their attending doctors during hospitalization, they will be doubtful about the treatment prescribed by the attending physicians and encounter uncertainty about their health (Rains & Tukachinsky 2015). Seeking social support is an effective way for patients to reduce health-related uncertainty and enhance self-control (Yan & Tan 2014). According to SNT, when people face severe health problems, they usually cannot seek help with relations from strong ties to get novel and beneficial information to meet their needs. Families and close friends often lack the medical knowledge and capacity to provide adequate and valuable social support (Tanoue et al. 2020; Wondimagegnehu et al. 2019). At the same time, health problems are too sensitive and private, and patients may feel inconvenienced when seeking support from close relations (Wright & Miller 2010).

Existing studies proved that people were more likely to obtain new and valuable information when they sought social support from weak ties than from strong ties (Granovetter 2018). At the same time, weak relations can show many advantages in dealing with sensitive or uncertain problems (Baum et al. 2012). Due to the popularity of health services on the Internet, people can establish new communication channels and obtain social support through the Internet at a lower cost. Patients can build weak relationships through the Internet to access novel treatment information to deal with the problems caused by patient-physician trust problems.

The Internet provides numerous opportunities to communicate with physicians through online healthcare communities, thus providing patients with the possibility of online professional support. When patients lack trust in their attending physicians' ability, they may question or even disapprove of the medication intervention provided by the attending physicians. Patients can seek online professional support from other physicians for alternative medication treatment, and learn more about the options through online communication channels to reduce the uncertainty of the current medication regimen. Based on the above analysis, we proposed the following research hypothesis.

H2a: Patients' trust in the ability of their attending physicians during hospitalization negatively affects accessing online professional support after discharge.

Meanwhile, discharged patients can establish communication with similar patients suffering from the same disease through forums and social media groups to obtain online peer support. When they lack trust in the ability of their attending physician, patients can reduce the uncertainty of the current medication regimen by sharing treatment details with similar patients. Then, we proposed the following research hypothesis.

H2b: Patients' trust in the ability of their attending physicians during hospitalization negatively affects accessing online peer support after discharge.

When patients lack trust in the integrity of their attending physicians, they will question the purpose of prescribing and whether the medication treatment is suitable for their health conditions. In such cases, patients also seek structural social support online to deal with this uncertain health environment. First,

patients can turn to online professional support to find solutions that benefit them by asking for help from other doctors. Second, patients can seek online peer support to understand the details of other patients' medication interventions. Patients could analyze which medication interventions are more beneficial due to their health conditions. Based on the above analysis, we proposed the following hypotheses.

H2c: Patients' trust in the integrity of their attending physicians during hospitalization negatively affects accessing online professional support after discharge.

H2d: Patients' trust in the integrity of their attending physicians during hospitalization negatively affects accessing online peer support after discharge.

Previous studies proposed that it is difficult to obtain one unified relationship between social support and health behaviors when sources of social support are not differentiated (DiMatteo 2004). Studies that explored the role of social support from strong ties believed that this social support could encourage discharged patients, relieve their stress, and provide practical help to improve patients' adherence rate (Kokorelias et al. 2019). However, social support from strong ties rarely leads to novel information and alternative solutions. According to SNT, patients will establish weak relationships through the online environment for medication information matching their health conditions.

On the one hand, when discharged patients seek professional support online, patients can access medication interventions provided by physicians other than their attending physicians. Patients can have continuous communication with online physicians and enhance their comprehension of the medication solutions inconsistent with their medication interventions, resulting the non-adherence behaviors. Then, we proposed the following hypothesis.

H3a: Discharged patients' online access to professional support negatively affects their adherence to medication interventions.

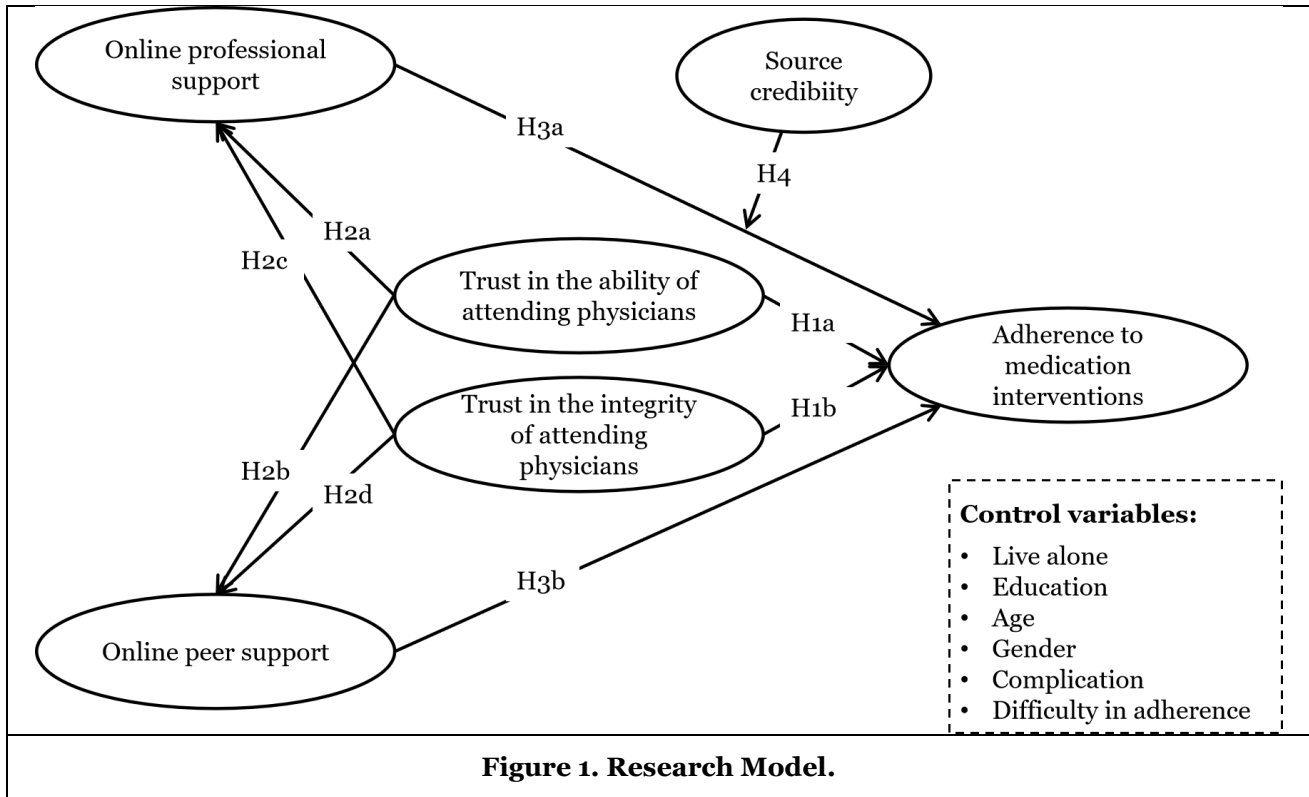
On the other hand, when discharged patients seek online peer support, various treatment experiences, medication regimens, and drug effects shared by similar patients are accessible. Because the treatments are very individualized and related to the experience of attending physicians, the medication interventions provided by peers are often different from the support seekers. Further, when discharged patients obtain peer support online, it will negatively affect patients' adherence to medication interventions provided by their attending physicians. Based on the above analysis, the following research hypothesis is proposed.

H3b: Discharged patients' online access to peer support negatively affects their adherence to medication interventions.

After receiving online structural social support, the characteristics of the sources can influence the acceptance and adoption of the information contained in social support (Sussman & Siegal 2003). Among these characteristics, source credibility is the most significant factor among all source characteristics that influence information characteristics (Luo et al. 2015). It reflects the value of information and the degree of the contribution it can make. When the source of online professional support is more credible, discharged patients will be more agree with the support providers. Then, the negative effect of online professional support on medication intervention adherence will be enhanced. We hypothesized as follows.

H4: Source credibility of online professional support negatively moderates the relationship between online professional support and adherence to medication interventions.

Figure 1 summarizes the above hypotheses. We also select living arrangements (living alone or with others), education, age, gender, complication, and difficulty in adherence as control variables.



Research Methodology

This study employed a mixed-method approach to generate meaningful insights into studying an underdeveloped context (Venkatesh et al. 2013). A mixed-method approach can enable us to triangulate findings from both quantitative and qualitative studies and provide a multi-perspective understanding of discharged patients' adherence to medication interventions. To give an in-depth understanding of patients' medication intervention adherence behavior after discharge, we conducted a quantitative study (survey) to identify the hypotheses and a qualitative study (semi-structured interview) to explore the support-adherence path.

Quantitative study

Data Collection

Due to COVID-19, offline hospitals could not support questionnaire distribution. To test the research model, we surveyed to collect data through "wjx.cn", one of the most popular online survey platforms in China, to find the target population. First, a total of 653 participants joined this survey. After the systematic and manual screening, the website eliminated 291 questionnaires. Second, the authors excluded 51 questionnaires to remove participants without careful attitudes (more than eight successive answers with the same values). Finally, a total of 311 participants were engaged. Previous studies illustrated a high dropout rate through online surveys may exist (Andrews et al. 2003). At the same time, we set a question to check the hospitalization number within two years to remind respondents about the importance of hospitalization experience. Participants may drop out when they realize the strict inclusion criteria.

Measurement

This study followed existing literature to develop the measurement items and measure the adherence to medication interventions using a simple question "To what degree have you achieved the medication

interventions that your attending physicians asked?". Items of trusting beliefs were adopted from McKnight et al. (2002) on a 7-point Likert scale (7 stands for a relatively higher level of trust). We also used Lubben Social Network (Lubben et al. 2006) to measure structural social support. Finally, we adopted items of source credibility based on Luo et al. (2013) with a 7-point Likert scale (7 stands for strongly agree). This study invited two Ph.D. and three master students to read, discuss, and revise all the measured items for readability.

Demographic Analysis

Among all the respondents, most of the postgraduates were female (193/311,62.06%) and were aged between 26-30 (136/311,43.73%) and 31-40 (118/311,37.94%). Most respondents have a bachelor's degree (261/311,83.92%). Meanwhile, almost all respondents do not live alone (294/311, 94.53%). This study also investigated the complication conditions of the discharged patients and asked two master's students to classify whether they had complications based on the patient's self-report. The results showed that most patients had no complications after discharge (206/311, 66.24%). The demographic details shown in Table 1.

Demographic Variables	Categories	Number	Percentage
Gender	Male	118	37.94%
	Female	193	62.06%
Age	18-25	33	10.61%
	26-30	136	43.73%
	31-40	118	37.94%
	41-50	20	6.43%
	51-60	4	1.29%
	Above 60	0	0
Education	Junior high school and below	0	0
	Senior high school	2	0.64%
	College	36	11.58%
	University	261	83.92%
	Graduate School	12	3.85%
Live alone	Yes	17	5.47%
	No	294	94.53%
Complications	Yes	105	33.76%
	No	206	66.24%
Table 1. Demographic Information of Participants.			

Qualitative study

Following the findings of our quantitative study, we conducted a semi-structured telephone interview with ten patients with hospitalization experiences in 2021. All these participants were randomly chosen from the patients of the Department of Neurology, the Second Affiliated Hospital of Harbin Medical University. The extraction principles of the participants are as follows.

- The age composition of the interviewees is consistent with the survey participants.

- A relatively balanced distribution of interviewees in terms of gender and diseases
- The length of stay of each interviewee exceeds and includes four days.

Table 2 shows the demographics and profiles of the interviewees.

No.	Age	Gender	Diseases	Length of stay	Number of hospitalizations	Side effects of drugs	Complication
1	33	Female	Vertigo	4	1	No	No
2	44	Male	Myelopathy	9	1	No	No
3	47	Male	Vestibular vertigo	8	1	No	No
4	28	Male	Multiple sclerosis	7	1	Yes	No
5	39	Male	Demyelinating disease	17	1	Yes	No
6	39	Female	Facial neuritis	12	1	Yes	No
7	36	Male	Demyelinating disease	4	2	Yes	No
8	37	Female	Multiple sclerosis	5	4	Yes	Yes
9	40	Female	Neuvaxitis	9	1	No	Yes
10	40	Female	Neuromyelitis spectrum of optic disease	6	9	Yes	No

Table 2. Demographics and profiles of interviewees.

The participants were interviewed to understand their illnesses, hospitalization experience, interactions with attending physicians, medication interventions, available social support, usage of online platforms, and issues in adherence to prescribed medication interventions. The interview was conducted in July 2022. Each interviewee was interviewed for about 30 minutes. We recorded the interviews and converted them into text. The coding procedure was conducted by the first two authors independently. Analysis was conducted using thematic analysis (Braun & Clarke 2006). The themes were based on the theoretical model constructs (online structural social support and adherence to medication interventions).

Three pre-set main themes were identified, namely doctor-patient trust, online structural support from multiple sources, and adherence to medication interventions. Coding examples were as shown in Table 3.

No.	Theme		Coding examples
1	Trust in physicians	Ability	No. 10: The physicians gave me a good analysis of the disease, and the treatment was suitable. I think their professional ability is good. When I first got sick, I saw a lot of physicians. It was never been clear how I got the illness until I met my attending physicians.
		Integrity	No. 1: (The hospital stays) cost me more than seven thousand yuan, but (I think) my problems were not solved. My attending physicians prescribed many unnecessary tests and medication for cerebral hemorrhage (another disease).
2	Online structural support	From physicians	No. 8: A physician of Beijing Tiantan Hospital specializes in treating this disease. This physician is very famous on the Internet. I contacted him through the hospital's website to ask the physician to prescribe traditional Chinese medicine to regulate my immunity.
		From peers	No. 7: I have contacted several patients in a patient group and asked about the medicine they are using and the effect.

3	Adherence to medication interventions	No. 1: After eating the medicine prescribed for a long time, I stopped eating without any symptoms. I did exactly as the physician ordered. No. 7: The medicine prescribed after discharge is not covered by medical insurance, which is relatively expensive. I changed my meds myself.
Table 3. Coding examples		

Results

Quantitative Results

Measurement Model

We adopted partial least squares (PLS) techniques with Smart PLS (v.3.3.3) (Ringle et al., 2015) and bootstrapping with 5000 resamples. First, we tested the validity and reliability of dimensions of trust in physicians and source credibility. Table 3 shows the item loading and values for Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE); Table 4 shows correlations of concepts. As demonstrated in Table 4 and 5, the results showed reasonable reliability (item loading over 0.7), convergent validity (Cronbach's alpha and CR over 0.7 and AVE over 0.5), and discriminant validity.

Constructs	Items	Item loading	Cronbach's α	CR	AVE
Patients' trust in ability of attending physicians	TAP1	0.866	0.701	0.833	0.626
	TAP2	0.836			
	TAP3	0.742			
Patients' trust in integrity of attending physicians	TIP1	0.902	0.721	0.877	0.781
	TIP2	0.865			
Online peer support	OPES		1.000	1.000	1.000
Online professional support	OPRS		1.000	1.000	1.000
Adherence to medication interventions	AMI		1.000	1.000	1.000
Source credibility	SC1	0.769	0.760	0.844	0.575
	SC2	0.799			
	SC3	0.726			
	SC4	0.736			
Table 4. Reliability and Convergent Validity.					

	(1) Patients' trust in ability of attending physicians	(2) Patients' trust in integrity of attending physicians	(3) Online peer support	(4) Online professional support	(5) Adherence to medication interventions	(6) Source credibility
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TAP ₁	0.837	0.427	-0.039	-0.015	0.289	0.371
TAP ₂	0.804	0.372	-0.091	-0.074	0.201	0.260
TAP ₃	0.729	0.334	-0.063	-0.120	0.258	0.227
TIP ₁	0.432	0.903	0.028	-0.080	0.269	0.302
TIP ₂	0.414	0.864	-0.018	-0.001	0.235	0.310
OPES	-0.079	0.008	1.000	0.487	-0.094	0.087
OPRS	-0.088	-0.049	0.487	1.000	-0.189	0.105
AMI	0.321	0.281	-0.094	-0.189	1.000	0.348
SC ₁	0.294	0.262	0.065	0.123	0.227	0.769
SC ₂	0.321	0.247	0.061	0.101	0.349	0.799
SC ₃	0.219	0.249	0.068	0.085	0.216	0.726
SC ₄	0.251	0.305	0.074	-0.004	0.221	0.736
Table 5. Cross Loading.						

Structural Model

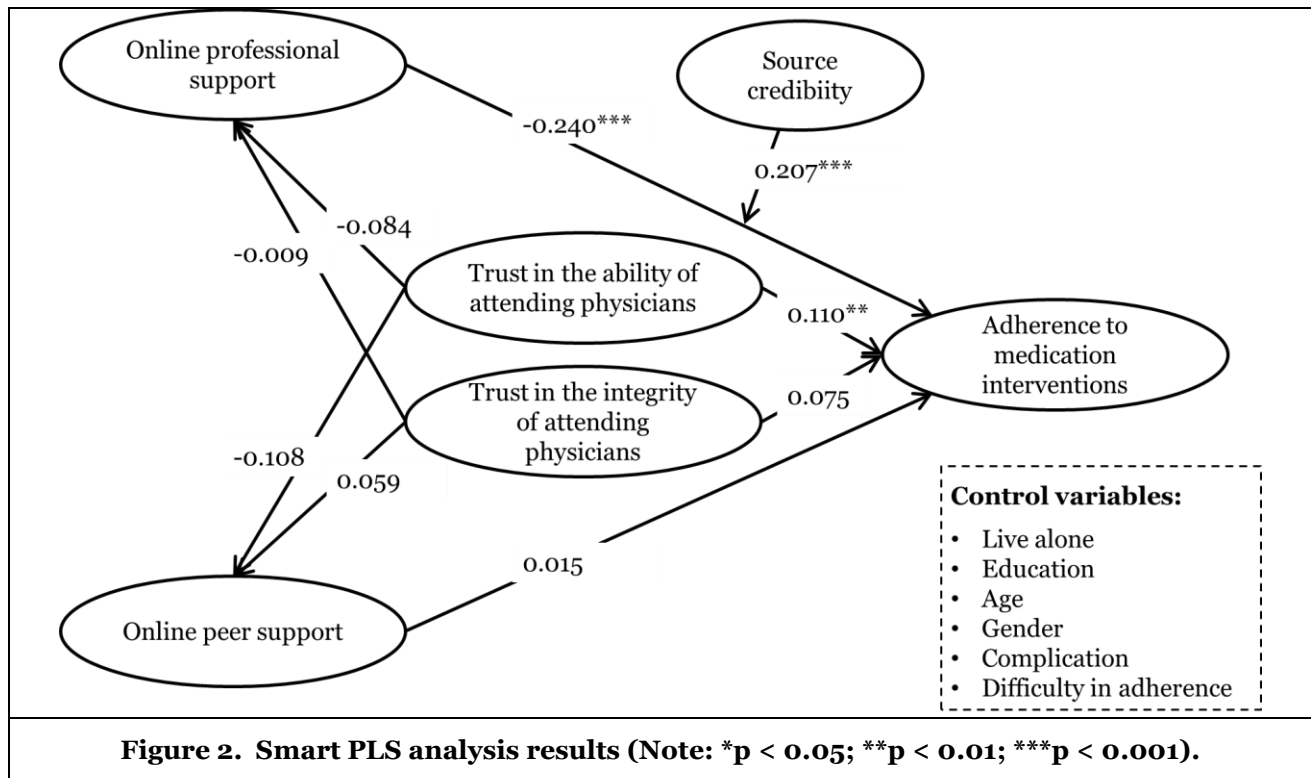
Figure 2 presents the results of our research model with an R square of 0.295.

First, patients' trust in the ability to attend physicians positively affected the adherence to medication intervention (H1a: $\beta = 0.110$, $t = 1.979$, $p < 0.05$), supporting H1a. Patients' trust in the integrity of attending physicians didn't show a significant effect on medication intervention adherence (H1b: $\beta = 0.075$, $t = 1.297$, $p > 0.1$).

Second, patients' trust in attending physicians, either ability or integrity, did not significantly affect patients' access to professional support online (H2a: $\beta = -0.084$, $t = 1.199$, $p > 0.1$; H2c: $\beta = -0.009$, $t = 0.129$, $p > 0.1$). It seems that patients treat attending physicians and online professional support as two independent supporting sources.

Online professional support was found to negatively affect medication intervention adherence (H3a: $\beta = -0.240$, $t = 4.032$, $p < 0.01$), supporting H3a. Source credibility positively moderated the relationship between online professional support and adherence to medication interventions (H4: $\beta = 0.207$, $t = 4.340$, $p < 0.01$). The empirical results provide support for the interference role of online professional support for adherence to medication interventions.

As for online peer support, patients' trust in attending physicians' ability or integrity did not significantly affect patients' online access to peer support (H2b: $\beta = -0.108$, $t = 1.573$, $p > 0.1$; H2d: $\beta = 0.059$, $t = 0.882$, $p > 0.1$). In addition, online peer support did not significantly affect medication intervention adherence (H3b: $\beta = 0.015$, $t = 0.254$, $p > 0.1$). A possible explanation might be that those with hospitalization experience may suffer more severe situations and the risk of counting on online peer support for medication interventions is high. So online peer support may be left out of the decisions related to medication interventions.



Qualitative Results

Interview results provide further insight about the challenges in adherence to medical interactions for those with hospitalization situation and similar health situations.

Trust in the ability of attending physicians and online professional support

Interviewees who trusted their attending physician's ability also tried to seek online professional support. Interviewee eight, she "always went directly to her attending physicians every time she became ill". However, she also believed in traditional Chinese medicine (TCM) when she was discharged from western medicine hospitals, which has nothing to do with trust or distrust in her attending physicians. "After being treated by western medicine, I would like to receive the TCM treatment through the Internet. In my opinion, The two systems of traditional and Western medicine need not clash."

The other two interviewees who expressed a high degree of trust in their attending physicians tried to acquire basic medical information by accessing online professional support. Interviewee number five tried to find something need to watch out for. "In my case, I was fairly well treated. However, I didn't understand the explanation of my attending physicians." Interviewee number six indicated that she didn't understand her illness during the hospitalization and discharge period. During her stay in the hospital, she said, "You have to believe the doctors. You can't treat yourself." After being discharged from the hospital, she felt her health condition is still in confusion. Then she seeks for support from online physicians to find out what should pay attention to.

In contrast, interviewee number one didn't trust the ability of attending physicians and also didn't seek online professional support. "After discharge, I didn't show any symptoms", so "there is no need to find a doctor online".

Trust in the ability of attending physicians and online peer support

Interviewee number five reported that he really trusted in his attending physicians' ability. Before admitted to the hospital, he thought his life was in danger. His attending physicians "made the diagnosis quickly and accurately". After discharged from the hospital, he received online peer support to "share illness experience and get emotional support".

There were also interviewees who were not willing to communicate with peers online due to the privacy concern and the bad feelings about the illness (interviewee number 10). Another respondent believed that every patient has his/her own health conditions and there was no need for interaction with other patients. "I think there are many kinds of encephalitis. There is no need to discuss my situation with others. I can recover little by little and get better. I don't care about other patients. I'm not a medical student and I'm just a patient. My illness experience is of no use to others "(interviewee number 9).

Trust in the integrity of attending physicians and online professional/peer support

Interviewee number seven identified with their attending physicians' medical ethics and believed that many clinical decisions the physicians made were from the point of view of the patients. He agreed that "the drugs prescribed by the attending physicians were really good and effective". However, "the drugs were not covered by the medical insurance", and he can't afford them. He believed that it was all up to himself whether he adherence to medication interventions or not. This interviewee tried to find a better treatment option and contacted other patients with the same disease by using an online WeChat group.

He also contacted TCM hospitals online. This hospital enjoyed a high reputation for treating the disease, so he wanted to make a reexamination. "This hospital owns a 7T magnetic resonance imaging (MRI) to give a clear examination." After noticing that there is a free reexamination in 2022, the interviewee made an online appointment.

Discussion

This study used a mixed-method approach to examine the influencing factors of discharged patients' adherence to medication interventions between online and offline social support. Based on SNT, this study identified the three sources for structural social support, from offline attending physicians, online professionals, and online peers, and tested the role of the two online structural support and trust in attending physicians in influencing discharged patients' adherence to medication interactions.

In the quantitative research, first, the results supported the lack of patients' ability dimension of trust in attending physicians decreased the adherence to medication interventions prescribed by these offline physicians after discharge. However, the integrity dimension did not show a significant impact. These results highlighted the importance of patients trusting in the ability of their attending physicians in posthospital behaviors. Second, the results showed that both dimensions of trust in the attending physicians did not significantly impact online structural support. The results are interesting because, with the fast development of the Internet in the health section, multiple health services have emerged, including multi-sources of social support. Motivated by these insignificant results, we conducted qualitative research in this study. Third, on the one hand, online peer support from similar patients could not predict medication intervention adherence behaviors. On the other hand, online professional support could negatively impact this adherence, and the source credibility would weaken this influence. Further, in the qualitative research, we found that discharged patients usually turned to online professional support from the TCM, whether they trusted their attending physicians or not.

This study makes significant contributions to the literature in the following ways.

First, we extended the impact of patient-physician trust from the in-hospital period to outside the hospital. Results showed that patients' trust in physicians' ability is crucial in ensuring adherence to medication interventions. Our results provided compelling evidence to support the investment in patient-attending physician interactions to facilitate and cultivate trust relationships between patients and attending physicians. Practically this could greatly reduce the potential medical risk and cost for patients.

Second, online professional support is perceived as an independent alternative source for patients' decisions in medication intervention adherence. One possible reason is the unique situation in China, where two distinctive medical systems, namely western and TCM, co-exist. And the interview study results showed that the health dilemma faced by discharged patients was complex. Patients believed that TCM could regulate their health conditions after dealing with acute symptoms in Western medicine hospitals. Another reason was that although patients would be trained with medical knowledge during hospitalization, they still felt confused about their diseases and the resulting anxiety, hence driving them to seek online professional support.

Finally, the most interesting finding in this study is to reveal the potential "dark side" of online professional support, which most eHealth platforms have been advocating. Online professional support leads to a negative impact on patients' adherence to medication interventions. This result raises the risk for patients and the challenges for physicians to battle the distraction of various "solutions" solicited by patients via online platforms. Our results also revealed that such interference effect is weakened if the online platforms enjoy high source credibility. Different from most prior research, our findings suggest more caution is necessary to monitor the penetration and integration of online health platforms with medical systems.

This study did not find significant roles played by online peer support. It may be related to the risk level of patients' decisions and the level of embeddedness of patients in online peer support communities. Such insignificant results should not be interpreted as unimportant or irrelevant, but warrant future research investigation.

In practice, this study highlights the importance of establishing a high-trust medical system. At the same time, physicians should continuously improve their professional ability to promote the patients' trust. Second, this study puts forward suggestions for online medical platform providers. For discharged patients, the online professional support provided by platform providers will cause patients' non-adherence to the medication interventions prescribed by their attending physicians, leading to personal economic and health loss.

Conclusion

eHealth has received massive interest from investors, policymakers, healthcare institutes, and practitioners. Particularly, third-party online platforms have attracted huge investments, enabling them to build a large pool of professionals to provide alternative channels for healthcare services. Despite the good intention to provide ubiquitous accessibility of quality medical support, we should be cautious with their impact on existing medical systems. For most patients, medical decisions and treatment are risky and costly. Having widely accessible medical information and support cannot overlook the patients' decision-making challenges and knowledge gaps. Our research provides essential and timely insight into the possible interference of online professional support for patients to adhere the medication interventions. At the same time, our results reinforce the necessity to strengthen the trust relationship throughout the treatment cycle. Future research is also necessary to continue exploring how to align online and offline medical support systems.

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