Case discussions using WeChat: Are they reliable?

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Abstract

Background : At present, more and more clinicians in China are partaking in case discussions using WeChat groups for the purposes of communication, diagnosis, treatment planning, and information sharing. However, the reliability of discussions using WeChat groups remains debatable. This study aimed to analyze case discussions in WeChat groups and evaluate their significance.

Methods : By taking screenshots of the chat records from the most-used WeChat groups by orthopedic surgeons, all of the data related to the cases were collected from June to August in 2019. We analyzed the purpose, participation, and completeness of each case. Furthermore, we analyzed whether the conclusion reached in each case discussion, which was supported by the majority of members, was consistent with the opinion of three experts after evaluating all of the data from the case records.

Results : Seven WeChat groups and 60 cases were included. WeChat group members often discussed cases to show surgical results (40.0%), to obtain treatment advice (39.0%), and to seek diagnostic advice (9%). The rate of 'likes' for 'surgical results show' was greater than the rate of 'likes' for alternative purposes ($P<0.05$). The percentage of complete, relatively complete and incomplete cases was 23%, 32%, and 45%, respectively. The relatively complete cases received more effective comments than the other cases ($P<0.05$). The cases for diagnostic purposes were more complete than those for other purposes ($P<0.05$). Among 60 cases, only 29 cases led to the same conclusions being reached among the three experts and WeChat group members. The consistency rate of conclusions relating to treatment was higher than that associated with the other purposes ($P<0.05$). The consistency rate of the complete cases was higher than that of the relatively complete and incomplete cases ($P<0.05$).

Conclusions : Clinicians should treat discussions in WeChat groups for clinical decision-making with caution. Online discussions using WeChat groups should be standardized in respect to the cases presented and the comments that are generated.

Introduction

Clinicians experience substantial confusion in the course of their clinical work. A systematic review of clinical questions raised by clinicians showed that clinicians ask about one question for every two patients [1]. Time constraints and clinicians' doubts about the existence and usefulness of relevant answers are the most commonly reported barriers to pursuing answers to their clinical questions [2]. Due to the rapid development of social media, clinicians are increasingly using such platforms to communicate with colleagues, engage in case discussions, share information, and disseminate research findings [3], in addition to face-to-face consultations with colleagues [4]. The platforms for online medical communication include Facebook, Twitter, WeChat, You Tube, LinkedIn, Yahoo, etc. [5–7]. With over 900 million active users in 2017, WeChat is the most popular instant communication application and an important part of the daily life of most Chinese people [8]. Furthermore, clinicians in China also carry out medical case discussions in WeChat by setting up many WeChat groups.

Without requiring the patients' contact, online case discussions have an advantage in that they are independent of time and place, and allow individuals to participate at their own pace, which is especially relevant among health professionals who are faced with heavy workloads, competing priorities, and limited resources for their professional development[9], particularly in China. However, effective communication in medical cases discussions remains a major challenge [10]. The trustworthiness of case sources is very important in a health environment. Clinical processes are often based on articulation and effective communication among physicians from various disciplines across time and space. Several factors may contribute to a lack of understanding in respect to what constitutes effective communication, which thus leads to medical errors that threaten patient safety [10]. Case discussions in WeChat tend to be quite capricious, and there is no standard. The cases posed by clinicians may include medical histories, physical examinations, and radiological imaging records of patients. However, some clinicians may only post a radiological imaging record in order to obtain diagnostic and treatment planning advice from other group members. In addition, the comments in WeChat groups varied, and the members of WeChat groups would not be responsible for what they had said. WeChat group members are responsible for discerning relevant answers and ascertaining the validity of the answers provided. Whether or not case discussions in WeChat groups are reliable or offer significant guidance to clinicians remains unknown. To our knowledge, no relevant research on this issue exists. Our study aimed to evaluate whether or not case discussions in WeChat groups were helpful to clinicians by collecting data related to the cases discussed among our team in WeChat groups for a three-month period.

Methods

From June to August in 2019, we analyzed all posts related to the WeChat groups which were most used by orthopedic surgeons in our hospital. These WeChat groups were also popular among orthopedic surgeons across China, and the members of these groups came from all over the country. All posts that were submitted to us were collected by taking screenshots during the study period. We selected case discussions from all of the posts. Two of the authors, who were not members of the medical WeChat group, browsed through and analyzed all of the data related to the cases (including each case and all subsequent comments and replies to the case). Two of the authors independently analyzed the data related to the posts and continued discussions until a consensus was reached. We classified each original post as follows: (i) 'diagnosis'; (ii) 'treatment'; (iii) 'surgical results show'; (iv) 'others' (no clear purpose), and our research subject involved the first three categories for which cases were presented. Cases were classified as complete cases, relatively complete cases or incomplete cases. A complete case was deemed to include: (i) the primary complaint and a brief medical history, (ii) main positive signs, and (iii) necessary laboratory and imaging examinations. A case which was lacking in respect to one of these conditions was regarded as a relatively complete case, and a case which included only one condition was considered an incomplete case.

The engagement of each case (i.e., including the number of participants, 'likes' and effective comments which we defined as comments that did not include 'likes') was also analyzed. Participants, effective comments and 'likes' were standardized in accordance with the number of members in each WeChat

group discussion, due to the different sizes of the WeChat groups. Any uncertainties regarding the coding decisions were resolved by one of the co-authors who had extensive experience. We considered the following: The conclusion of each case discussion; whether the diagnosis in the case was clear for diagnostic purposes; whether the treatment plan in the case was determined for treatment; if there were different opinions in respect to the clinical procedures of the case for the surgical results. The conclusion of each case discussion was the one that was supported by the majority of the WeChat group members. If there were different opinions about the case which were supported by the same number of members or if there were no comments and replies that followed the case, the case was assigned 'no result.' Three top experts, who were from the Grade A Tertiary Hospital (GATH) and held senior titles in China, were requested to evaluate all of the data from case records and to then give their opinion. We evaluated whether the opinion formed by the three experts was in agreement with the opinion that was supported by the majority of members in the WeChat group, and we noted how many opinions there were. If the opinions offered on the cases were consistent, the case was assigned 'consensus,' and if not, the case was assigned 'inconformity.' If experts did not engage in discussions and offer advice about the case, the result of the case was also assigned 'inconformity.'

This study was approved by the Medical Ethics Committee of the second Affiliated Hospital of Xi'an Jiaotong University. Group members were informed that all new posts submitted during the study period would be used anonymously for research purposes without breaching members' privacy. All group members provided written informed consent for the use of the posts in WeChat for research purpose.

Statistical analyses

Differences in engagement in respect to the three different purposes and varying degrees of completeness were evaluated by conducting an ANOVA test. The case completeness rate of the different purposes and the consistency rate of conclusions were evaluated by carrying out a chi-square test.

Results

Seven WeChat groups and 74 posts (60 cases included) were retrieved from the cellphones of the three doctors. WeChat group members posted comments in respect to treatment (39.0%), the surgical results show (40.0%), diagnosis (9%), and for other purposes (12%) (Figure. 1). There were no significant differences in participations and effective comments among the cases presented for the three purposes. Furthermore, the cases for 'surgical results show' received more 'likes' than cases which were presented for 'other' purposes ($P = 0.031$) (Figure. 2). The percentage of complete, relatively complete and incomplete cases was 23%, 32%, and 45%, respectively (Fig. 3). The relatively complete cases received more effective comments than the other two categories of cases ($P = 0.008$) (Fig. 4). The cases presented for 'diagnostic' purposes were more complete than those presented for 'other' purposes ($\chi^2 = 12.143$, $P = 0.016$) (Table 1). Among the 60 cases analyzed, only 29 led to the same conclusions being reached by the three experts and WeChat group members (Fig. 5). The cases for 'treatment' purposes which were presented to the three experts and WeChat group members produced more similar conclusions than those

presented for the other two purposes ($\chi^2 = 14.687$, $P = 0.001$) (Table 2), and complete cases led to more similar conclusions than those associated with relatively complete and incomplete cases ($\chi^2 = 11.321$, $P = 0.001$) (Table 3).

Table 1
The completeness of case records according to the different purposes

Purpose	Complete cases(N)	Incomplete cases(N)	Percentage of complete cases(%)
Diagnosis	3	3	50.0
Treatment	7	20	25.9
Surgical results show	4	23	14.8
χ^2 value			120.00
P			0.000

Table 2
The consistency rate of different purposes between the three experts and WeChat group members

Purpose	Consensus (N)	Inconformity (N)	Consensus rate(%)
Diagnosis	3	1	75.0
Treatment	17	1	94.4
Surgical results show	8	14	36.4
χ^2 value			14.687
P			0.001

Table 3

The consistency rate of varying degrees of completeness between the three experts and WeChat group members

Purpose	Consensus (N)	Inconformity (N)	Consensus rate (%)
Incomplete	8	13	38.1
Relatively complete	13	2	86.7
Complete	7	1	87.5
χ^2 value	11.327		
P	0.003		

Discussion

By analyzing case records that had been presented and the subsequent comments which were posted in WeChat groups, our study demonstrated that members of WeChat groups preferred to post cases to present their surgical results (which might receive more ‘likes’) rather than present cases for diagnostic and treatment purposes. A substantial part of the case records posted on WeChat were incomplete, and the results of WeChat group discussions might not be recommended to clinicians, especially in regard to incomplete cases discussions.

In contrast to previous studies about the questions asked by clinicians, which indicated that treatment and diagnosis were the most frequently observed types of clinical questions [11, 12], the work presented showed that cases posted for ‘surgical results show’ represented a high proportion (40%), followed by cases for ‘treatment’ (39%), both of which were greater than cases for ‘diagnosis’ (9%) in WeChat groups. Diagnosis classifies the patient as having or not having a particular disease. Historically, diagnosis was regarded as the primary guide to treatment, and it is still considered the core component of clinical practice [13–15]. Clinicians in WeChat groups did not seem to care about the diagnosis. If the diagnosis was incorrect, discussions about treatment and surgical results did not make sense. To further compound this issue, ‘surgical results show’ received more ‘likes’ than the other two purposes. From this viewpoint, clinicians who show surgical results in WeChat might do so simply to obtain ‘likes’. Discussions such as these had no meaning. Such case discussions should not be encouraged.

To our knowledge, this was the first research study to assess case records posted on social media. We know that diagnoses and treatment options should be based on complete case records which should include the patient’s medical history, physical examinations, and auxiliary examinations. The clinical case records that were posted on the WeChat groups were rarely complete. In addition, physical examinations and medical histories were the most frequently omitted sets of data, especially physical examination records. Diagnosis provides clinicians with the means to organize and interpret a range of information about the patient symptoms, signs, tests, and investigations, which forms the basis of decision-making.

Furthermore, the patient's medical history and physical examination results have been the foundation of medical diagnoses for centuries [16, 17]. In the past several decades, however, laboratory tests and imaging modalities have expanded in number and their availability, and clinicians can now see patients in ways that were previously unimaginable. As a result, physical examination skills and techniques have been underemphasized in medical education, and these providers rely more on tests and imaging than ever before [18]. Members of WeChat groups often presented an X-ray in order to obtain advice about a diagnosis or treatment. The patient's medical history and physical examination record was also required. Perhaps this is why, in our study, the top three experts refused to engage in discussions and offer advice concerning the nine cases, which were all incomplete, and WeChat group members prefer to reply to the relatively complete cases rather than to those that are incomplete. Moreover, the trustworthiness of case sources is very important in a health environment [10]. Physical examination records, even if posted in case discussions, might not be able to reflect the patient's true situation, due to its subjective nature. A lack of understanding about what constitutes effective communication may contribute to medical errors that endanger patient safety [10, 19]. The high engagement in case discussions indicated that clinicians were interested in the cases [20]. However, to our surprise, the clinicians who participated in the WeChat groups preferred to award their 'likes' to cases for 'surgical results show', most of which were incomplete cases. The clinicians who posted the cases did not obtain any advice from other members of the WeChat group, and the other members also did not learn anything from the communication. In this sense, those discussions proved largely futile.

All of the three top experts from the GATH held senior titles in China and had extensive clinical experience. The final opinions were formed by the experts according to the relevant published evidence-based resource and their clinical experience. Their views were considered to represent the correct decision. A considerable part of the case discussions produced different results from the experts. Furthermore, the cases for 'diagnostic' purposes and the complete cases had a high consistency rate. Table 1 shows that the presentation of cases for 'diagnostic' purposes was associated with a higher number of complete cases than cases presented for 'treatment' and 'surgical results show' purposes. Therefore, we believe that if case records are complete when presented, such cases could play a role in terms of the conclusions reached in case discussions that are carried out using WeChat groups.

Social medical case discussions are popular [21, 22], and patients are actively using health networks for the diagnosis or treatment of their diseases. However, we do know that clinical processes, including diagnosis and treatment, are often based on articulation and effective communication among physicians from various disciplines across time and space [10, 19]. Many healthcare professionals fear that social media use by patients for health-related purposes often spreads misinformation among patients [23]. What about clinicians? We should consider if case discussions in WeChat groups are important, and whether the results of such discussions were beneficial to the members, especially for those who uploaded the cases. Loai Albarqouni et al. [12] found that evidence-based resources were infrequently used to support answers to the posted clinical questions in their study of general practitioners' use of social media networks to answer their clinical questions. The opinions obtained from social media might be not reliable. In our study, a considerable part of the case discussions produced different results from

the experts. The results of social medical discussions should be treated with caution. We have to ascertain the validity of the answers provided, and there is the possibility of providing and perpetuating unsound answers to a large group of people who use social media. A systematic review of the clinical questions raised by clinicians reported that clinicians were highly effective in finding answers to questions by referring to evidence-based resources [1, 24]. Clinicians may pursue their questions by this means.

A limitation of this study was that the WeChat groups that we analyzed might be narrow in their scope. Figure 4 shows that WeChat group members preferred to reply to the relatively complete cases rather than to those that were complete, which made no sense. This may be due to the small sample size. Nevertheless, we believe that the recent advancement of case discussions on WeChat was reviewed in our study. Undeniably, due to the anonymity of WeChat or to the different times and locations, case discussions in WeChat groups were more lively than face-to-face discussions. If some efforts were made to standardize case records, especially medical histories and physical examinations, as well as the subsequent comments which rarely referred to evidence-based resources, the case discussions in WeChat groups might be significant.

Conclusion

Considering the reliability of the cases posed and the validity of the advice provided, clinicians should treat discussions in WeChat groups for clinical decision-making with caution. The online case discussions in WeChat groups should be standardized in respect to the case posed and the comments generated.

Declarations

Acknowledgments

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Authors' contributions

Wei Wang and Rui Ma designed the study; Yongwei Li and Shugang Hu contributed to the data analysis and wrote the draft of the manuscript; Tariq Alkhatatbeh, Jialin Wang and Jidong Song collected the data of case discussions in WeChat. All authors read and approved the final version.

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Availability of data and materials

The datasets generated and/or analysed during the current study are not publicly available due data privacy rules but are available from the corresponding author on reasonable request.

Ethics approval and consent to participate

This study was approved by the Medical Ethics Committee of the second Affiliated Hospital of Xi'an Jiaotong University. Group members were informed that all new posts submitted during the study period would be used anonymously for research purposes without breaching members' privacy. All group members provided written informed consent for the use of the posts in WeChat for research purpose.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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Abbreviations

Abbreviations

Abbreviation	Full name
GATH	Grade A Tertiary Hospital
ANVOA	Analysis of Variance

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Figures

Figure 1

Classification of each original post according to the purpose.

Figure 2

Number of participants, effective comments and 'likes' for cases presented for three different purposes. Cases for 'surgical results show' received more 'likes' than those presented for 'treatment' ($P<0.05$).

* $P<0.05$.

Figure 3

The integrity of case record for discussion. The rate of complete, relative complete and incomplete cases was 23%, 32%, and 45%, respectively.

Figure 4

Number of participants, effective comments and 'likes' for complete, relatively complete and incomplete cases. The relatively complete cases received more effective comments than complete and incomplete cases ($P < 0.05$). * $P < 0.05$.

Figure 5

Among 60 cases, only 29 cases led to the same conclusions being reached between the three experts and WeChat group members.