

Observation and Analysis of Case Discussions Using WeChat Groups Among Orthopedists

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Abstract

Background: With the vigorous development of social media networks, an increasing number of orthopedists in China are taking part in case discussions using WeChat groups. The case discussion process using WeChat is quick, convenient and not limited by time or space, but this kind of case discussion is also chaotic and unconstrained. This study is aimed to observe and analyze the purpose, participation, case completeness, opinion consistency of orthopedic case discussions using WeChat groups.

Methods: We collected data related to the case discussions of three orthopedic surgeons by taking screenshots of the chat records in the most-used WeChat groups from June to August 2019, and analyzed the purpose, participation, completeness and the opinion consistency between the majority of members and experts in related fields.

Results: The common purposes of orthopedic case discussions were showing surgical results and obtaining treatment advice. The number of likes received for cases showing surgical results was significantly higher than those for cases requesting diagnostic advice and obtaining treatment advice. The complete and relatively complete cases attracted more participants and received more effective comments than the incomplete cases. The opinion consistency rate of the complete cases was higher than that of the relatively complete and incomplete cases.

Conclusions: The case discussions using WeChat groups among orthopedists was mainly to show surgical results and request for diagnostic advice. Incomplete cases had low discussion participation and low opinion consistency. Online discussions using WeChat groups should be standardized with respect to the completeness of cases.

Introduction

With the rapid development of modern science and technology, increasingly more social media, including WeChat, QQ, Facebook, Twitter, You Tube, LinkedIn, microblogging, etc., are launching and changing the lifestyles and work styles of modern life [1–3]. WeChat is a free application (app.) launched by Tencent in 2011 to provide instant messaging services for smartphones [4]. With over 900 million active users in 2017, WeChat has become a popular instant communication app. and an important part of daily life for most people in China [5]. In contrast with other social media, WeChat users can set up WeChat groups consisting of members across the country and can deliver and share information in WeChat groups that can be read by every member.

Orthopedists are increasingly using social media to communicate with colleagues, engage in case discussions, share information, and disseminate research findings [6, 7]. Currently, Chinese orthopedists are conducting medical case discussions in WeChat groups in addition to holding face-to-face consultations with colleagues, without the involvement of patients. Online case discussions using WeChat groups are independent of time and place and allow individuals to participate at their own pace.

These advantages are beneficial to busy Chinese orthopedists who are faced with heavy workloads, competing priorities, and limited resources for their professional development [8].

The orthopedic cases should include medical histories, physical examinations, laboratory results and/or imageological examinations of patients [9]. However, case discussions in WeChat are quite capricious and nonstandard. Many orthopedists often send radiological images to obtain diagnostic and/or treatment advice from other members. The completeness of the cases shared should be a necessity, to provide more comprehensive information and gain more accurate suggestions. In addition, the purposes of case discussions using WeChat groups vary among orthopedists. Some orthopedists may request diagnostic suggestions or seek to obtain treatment advice, while others may only disseminate their achievements to expand their influence.

To the best of our knowledge, no relevant research has focused on the issue of case discussions using WeChat groups among orthopedists. Our study aimed to observe and analyze the purpose, participation, case completeness, and opinion consistency of orthopedic case discussions using WeChat groups.

Methods

Collection of data

We collected the data for the discussed cases by taking screenshots in the most-used WeChat medical groups of three orthopedic surgeons from the Second Affiliated Hospital of Xi'an Jiaotong University between June and August 2019. These WeChat groups did not contain any patients and were popular among orthopedic surgeons across China. 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 comments during the research period would be anonymously used for research purposes without violating the privacy of members and patients.

Group criterion and data processing

All the collected cases were classified into three main purposes: requesting diagnostic advice (P1), obtaining treatment advice (P2), and showing surgical results (P3). The participation in orthopedic case discussions was evaluated by three indexes, including participants, effective comments and likes. Likes meant that participates only sent a thumbs-up emoji and did not give any substantial opinions. Effective comments were replies that did not include any likes. Participants, effective comments and likes were standardized with the number of members in each WeChat group.

According to the level of completeness, all orthopedic cases were classified as complete, relatively complete or incomplete. A complete case included three main items: (1) a brief medical history, (2) main signs of physical examination, and (3) imaging examinations and/or laboratory findings. A case lacking any one of these three items was regarded as relatively complete, and a case lacking two of these three items was regarded as incomplete.

Analysis of data

Two of the authors in the field who were not members of the included WeChat groups analyzed all the data. We decided that a concluding opinion of a case discussion was reached when the diagnosis was clear, with regards to P1, when a treatment plan was determined, with regards to P2, or when there were consistent opinions on the surgical results, with regards to P3. A concluded opinion of a case discussion was one that was supported by the majority of the members in the WeChat groups. If there were different opinions supported by the same number of members or if there were no comments or replies that followed, the case was considered to have no concluded opinion. Three top orthopedic experts from the upper first-class hospital were requested to evaluate all the data and give their opinions. These experts held senior professional posts and were not in any WeChat groups in this study. If the opinions were consistent between the majority of members and experts in related fields, the case was considered to have reached a consensus; if not, the case was designated as nonconforming. We calculated and compared the opinion consistency rate of the different degrees of completeness between the majority of members and experts.

Statistical analysis

All quantitative data are presented as the means \pm standard deviations, and all statistics were analyzed by SPSS 13.0 software. Statistical significance of quantitative data between different groups was analyzed using a two-way analysis of variance (ANOVA) test, and multiple comparisons were performed using the least significant difference (LSD) test. Statistical significance of rate comparisons was analyzed using χ^2 analysis. A p value that was less than 0.05 was considered statistically significant.

Results

In this study, 7 WeChat groups and 44 cases were included. The purposes of the orthopedic case discussions using WeChat groups are presented in Fig. 1. The purposes of orthopedic case discussions were showing surgical results (40.0%), obtaining treatment advice (39.0%), requesting diagnostic advice (9.0%), and others (12.0%), such that showing surgical results was the most common purpose.

The participation of orthopedic case discussions was analyzed with respect to the numbers of participants, effective comments and likes according to different purposes, which is shown in Fig. 2. We found that P3 attracted more participants, and P1 received more effective comments, but the numbers of participants and effective comments of different purposes exhibited no statistical significance ($p > 0.05$). In the comparison of likes of different purposes, we found that P3 received more likes than P1 and P2 ($p < 0.05$).

Figure 3 shows the completeness of the discussed cases using WeChat groups. The percentages of incomplete, relatively complete and complete cases were 45%, 32% and 23%, respectively. Physical examination and medical history were the most frequently lacking data of the discussed cases.

Figure 4 shows the analysis results of participation for different degrees of completeness. The complete and relatively complete cases attracted more participants and received more effective comments compared with those of the incomplete cases ($p < 0.05$). The likes for different degrees of completeness exhibited no obvious significance ($p > 0.05$).

Table 1 shows the comparison of the opinion consistency rate for different degrees of case completeness between the majority of WeChat group members and experts in related fields. The opinion consistency rates of complete, relatively complete and incomplete cases were 87.5%, 73.3% and 42.9%, respectively. The consistency rate of different degrees of completeness showed a significant difference among different groups ($p < 0.05$), indicating the tendency of the consistency rate was as follows: complete > relatively complete > incomplete.

Table 1

The opinion consistency rate for different degrees of case completeness between the majority of members and experts in related fields.

Completeness	Consensus (N)	Nonconformity (N)	Consistency rate (%)
Complete	7	1	87.5
Relatively complete	11	4	73.3
Incomplete	9	12	42.9
Total	27	17	63.4
χ^2 value			6.596
P value			0.037

Discussion

Currently, case discussions using social media are becoming popular [10–14]. In particular, an increasing number of Chinese orthopedists are using WeChat groups to engage in case discussions and share information. However, online case discussions in WeChat usually have no standards or constraints. The present study was designed to observe and analyze the current situation of case discussions using WeChat groups among orthopedists and try to find some potential problems of such online behavior. By analyzing 44 case discussions in 7 WeChat groups, our study demonstrated that orthopedists preferred to show surgical results and obtain treatment advice, and broadly acknowledged opinions were difficult to reach for the incomplete cases.

The initiator started a case discussion for different purposes. We found that the most common purposes of case discussion using WeChat groups among orthopedists were showing surgical results and obtaining treatment advice, and only a small group of initiators wanted to request diagnostic advice. However, previous studies indicated that treatment and diagnosis questions were the most frequently asked questions by clinicians on social media [15, 16]. Diagnosis should be regarded as the primary

guide to treatment and the core component of clinical practice [9, 17, 18]. Orthopedists in WeChat groups seldom discussed the diagnosis, but discussions of the treatment and surgical results did not make sense if the diagnosis were incorrect or incomplete. We also found that the cases showing surgical results received more likes than other purposes. The main motivation of initiators for showing surgical results in WeChat groups was to obtain likes from other members and to advertise themselves using social media. Case discussions about showing surgical results had no virtual meaning and should not be encouraged.

The diagnosis establishment and treatment option should be based on complete case information, which should include the patient's medical history, physical examinations, and auxiliary examinations [19, 20]. In this study, the orthopedic case information discussed in WeChat groups was rarely complete. The physical examination records and medical history were the most frequently lacking data, especially the physical examination records. In fact, the medical history and physical examination of patients are the foundation of medical diagnoses [21, 22]. In the past few decades, laboratory tests and imaging examinations have been widely expanded and applied in clinics, while physical examinations have been underemphasized in medical practice [23]. Many clinicians now have formed a habit of relying excessively on auxiliary examinations to give diagnostic and therapeutic advice [24]. For example, many members in WeChat groups often presented an X-ray image to obtain advice on diagnosis or treatment. We found that the WeChat group members preferred to participate in and gave effective comments for the complete and relatively complete cases rather than the incomplete cases. The reason might be that the incomplete cases only provided part of the patients' clinical information, which was inadequate to give diagnostic or therapeutic advice. Most of the cases with the purpose of showing surgical results in our study were incomplete cases. These cases did not obtain much advice from other members in the WeChat groups, and other members did not receive much information from the discussions.

In the present study, the opinion consistency of case discussions using WeChat groups among orthopedists was analyzed by comparing opinions between the majority of members and three experts in related fields. We found that the opinion consistency rate was proportional to the degree of case completeness. This result again confirmed the importance of case completeness. The total opinion consistency rate in our study was only 63.4%, indicating that a considerable number of the case discussions reached different opinions. This means that the opinions obtained from social media might not be reliable and that the results of medical discussions using social media should be treated with caution. A systematic review of the clinical questions raised by clinicians has reported that clinicians were highly effective in finding answers to questions by referring to evidence-based resources [25, 26]. In fact, evidence-based resources were infrequently used to support answers to posted clinical questions during the use of social media networks [16]. Undeniably, orthopedic case discussions in WeChat groups are more convenient than face-to-face discussions. If some efforts are made to standardize case discussions using WeChat groups among orthopedists and evidence-based resources are well used, the case discussions in WeChat groups will become standard and meaningful.

Conclusions

The orthopedic case discussions using WeChat groups were mainly to show surgical results and obtain treatment advice. The presented cases that include complete information could attract more participants, receive more effective comments and reach higher opinion consistency, regardless of the initiators' purpose. Online discussions using WeChat groups should be standardized with respect to case completeness.

Abbreviations

analysis of variance (ANVOA); least significant difference (LSD)

Declarations

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 comments during the research period would be used anonymously for research purposes without violating privacy of members and patients.

Consent for publication

Not applicable.

Availability of data and material

The datasets during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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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 manuscript; Tariq Alkhatatbeh, Jialin Wang and Jidong Song collected the data; Kunzheng Wang revised the manuscript. All authors read and approved the final version.

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Figures

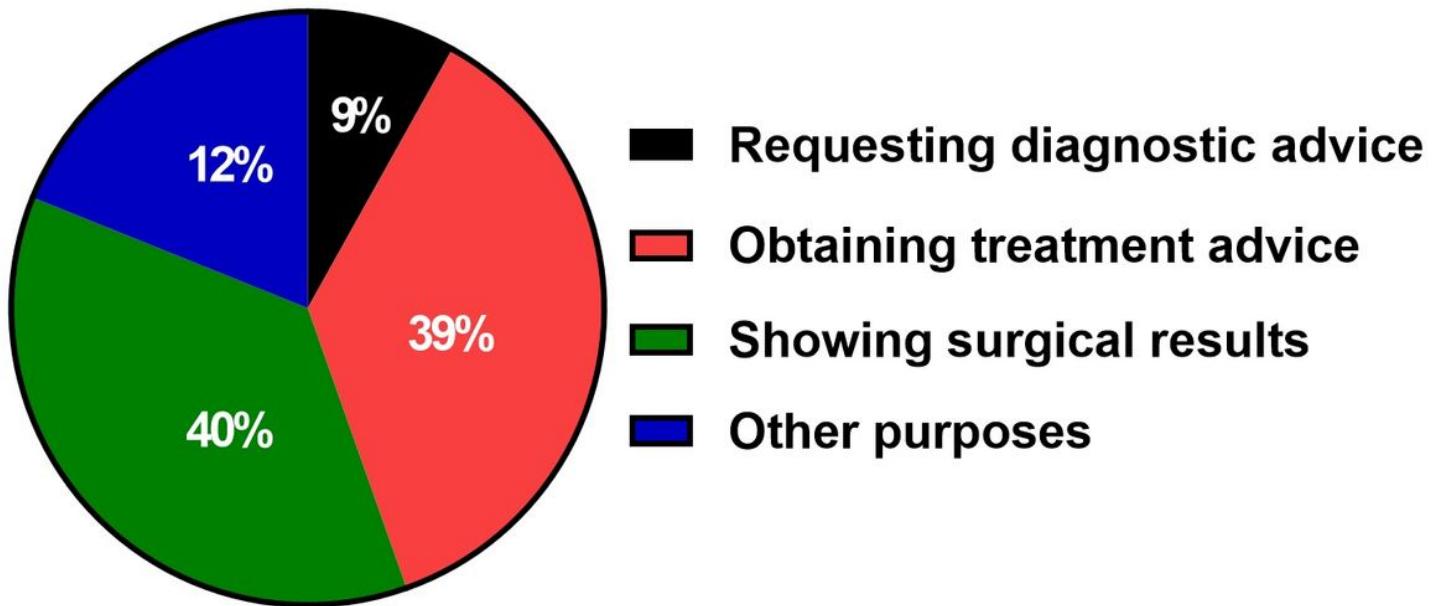


Figure 1

Proportion of different purposes of the discussed cases using WeChat groups.

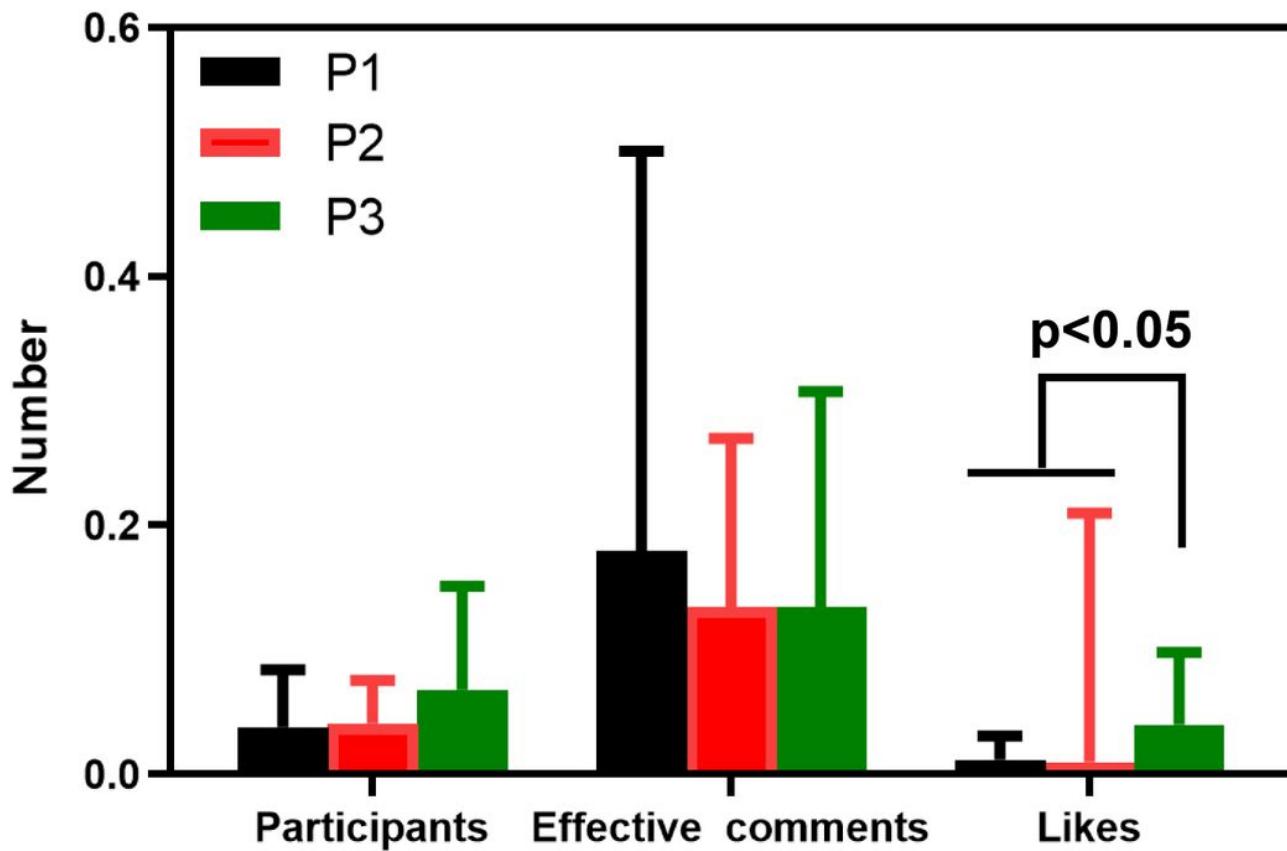


Figure 2

The numbers of participants, effective comments and likes of the discussed cases for different purposes.
P1: requesting diagnostic advice, P2; obtaining treatment advice, P3: showing surgical results.

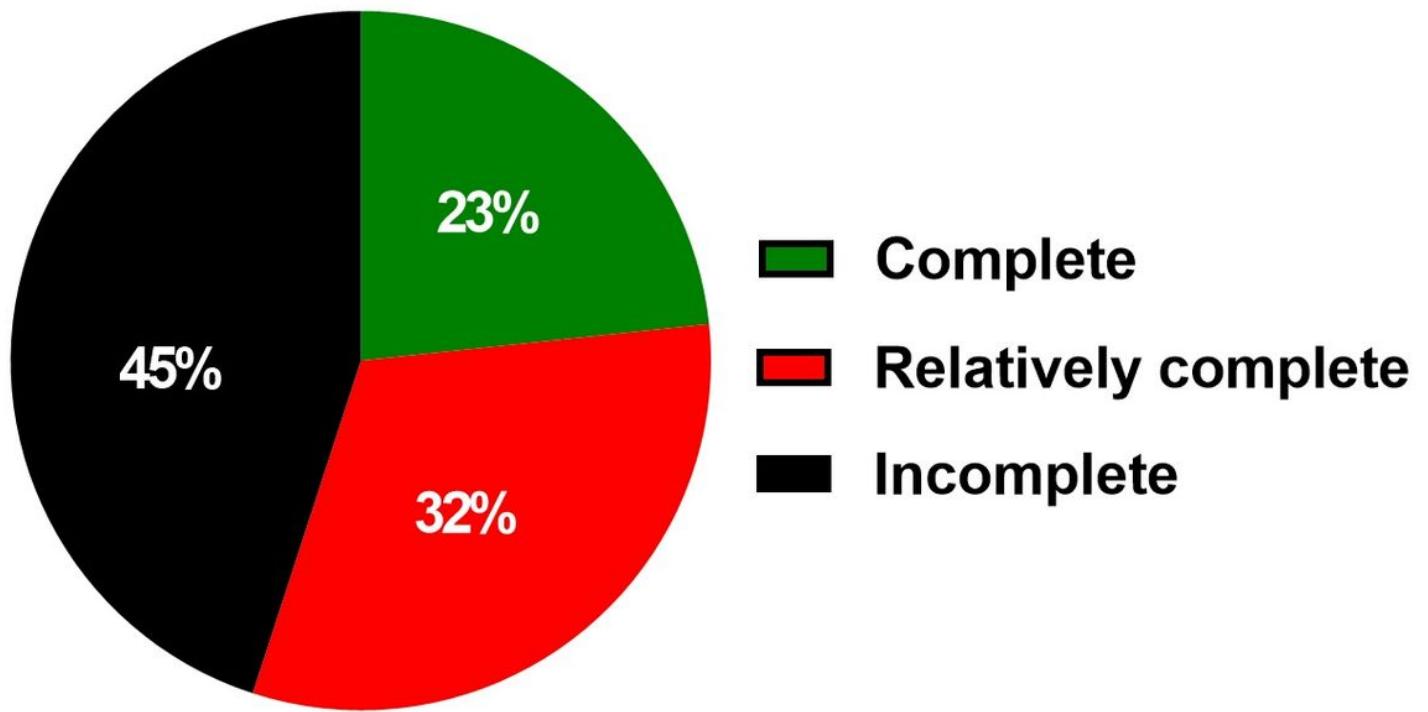


Figure 3

The completeness of the discussed cases using WeChat groups.

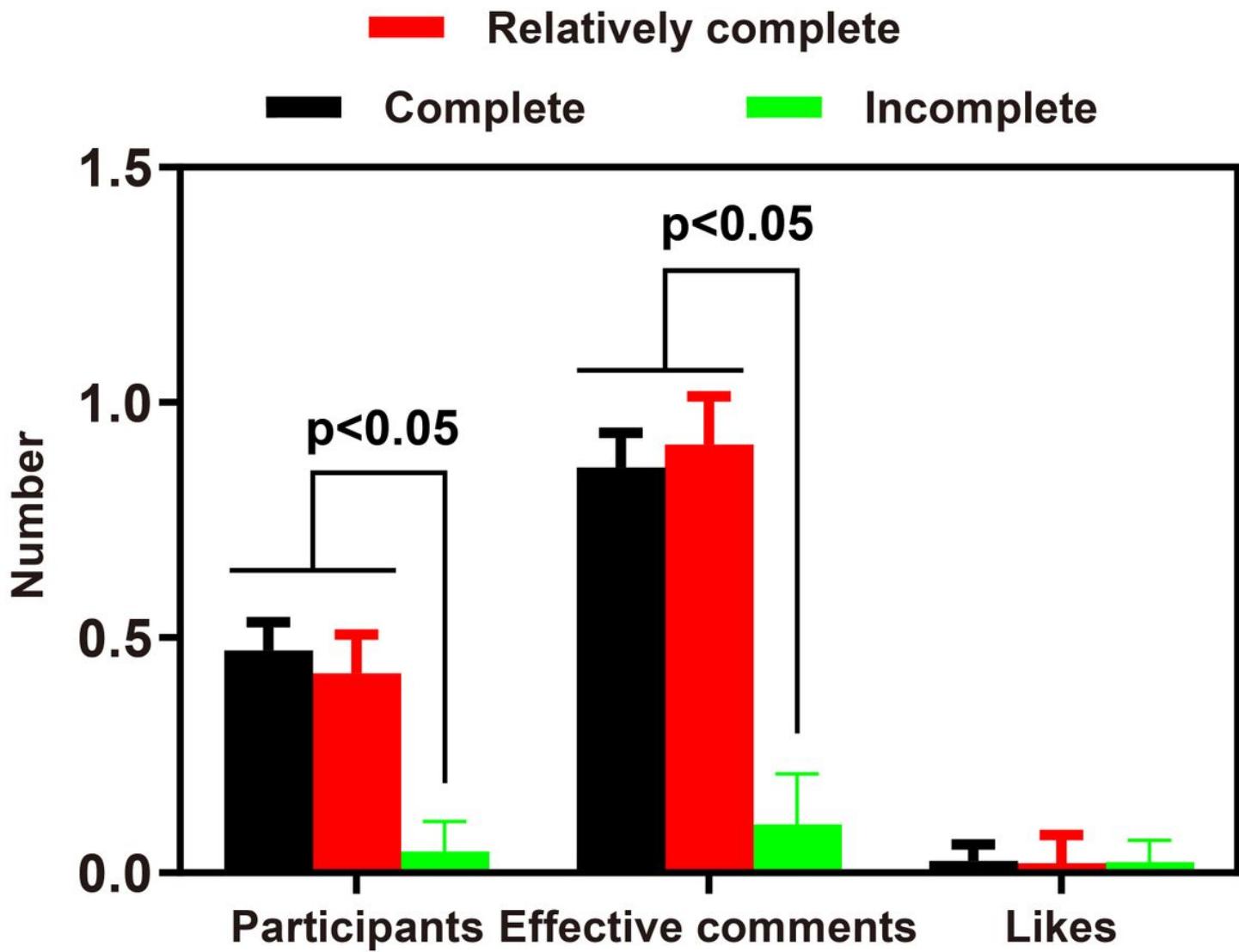


Figure 4

The numbers of participants, effective comments and likes for complete, relatively complete and incomplete cases.