ARTICLE

The Application of Mobile Phone APP in the Follow-up Management of Hospital

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ABSTRACT

Objective: Explore the application of mobile phone APP in the follow-up management of hospital in the information age, to build a harmonious doctor-patient relationship, improve the effective follow-up rate and promote the rehabilitation of patients. Methods: Compare and analyze the traditional telephone follow-up mode and the mode of mobile phone APP with telephone follow-ups. Results: In 2016, with telephone follow-ups only, the effective rate was 91.3%, the patient satisfaction rate was 92.6%. In 2017, besides telephone follow-ups, we used mobile phone APP, the effective follow-up rate got up to 96.2%, the satisfaction rate of patients got up to 98.1%. Conclusion: Compared with the traditional follow-up model, mobile phone APP follow-up model can improve the clinical follow-up service and the compliance of patients, help to reduce failures of follow-up. With mobile phone APP, it’s much more convenient and effective for doctors to communicate with patients, and it is better for the rehabilitation of patients with disease.

1. Introduction

Follow-up observation refers to a way that the medical and health departments contact the patients or their families who have treated in the hospital and know the patients’ living conditions and quality, prognosis, long-term efficacy and disease progression after discharge by various means [1]. Effective follow-up can inform us of the messages related to disease, such as complications, survival period, recurrence rate, etc., and on the other hand they can help to improve the treatment effect and the quality of the patients’ life effectively, even promote the improvement of medical level [2]. Consequently, follow-up observation is an important part of medical work and the key of building a harmonious hospital.

APP, or Application, is a third-party Application for smartphones with the development of various smartphones [4]. As an important carrier of mobile health technology, telephone has promoted health care systems including disease prevention, disease monitoring, chronic disease self-management, health promotion, improving medical compliance and so on [5-7]. This new follow-up model can establish a good doctor-patient relationship, improve the sincerity of patients and enhance the brand influence of hospitals. At the same time, regular tracking and active cooperation between the doctors and the pa-

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2. Materials and methods

2.1 General Information and Methods

A retrospective analysis was performed on 9198 patients discharged from the heart center of our hospital from January 2016 to December 2017, including 4503 patients discharged from the heart center in 2016 who were followed up by telephone and 4695 patients discharged from the hospital in 2017 who were followed up by mobile phone APP and telephone.

2.2 Statistical Methods

SPSS18.0 statistical software package was used for data processing, and X² test was used for rate comparison. P<0.05 was considered statistically significant difference, and P<0.01 is considered statistically significant difference.

3. Results

In 2016, 4503 patients were discharged from the heart center of our hospital, and the rate of their requiring follow-up is 100%. Including 4201 patients were followed up by telephone effectively, with an effective follow-up rate of 93.3% throughout the year. And the satisfaction rate of the effective follow-up patients was 95.6%. In 2017, 4,695 patients were discharged from the heart center of our hospital, and 4,518 patients were effectively followed up through telephone and mobile phone APP follow-up, with an effective follow-up rate of 96.2% for the whole year. The satisfaction rate of the effective follow-up patients was 98.1% (Table 1).

Table 1. The analysis of the telephone follow-up(2016) and Telephone with APP follow-up(2017)

<table>
<thead>
<tr>
<th></th>
<th>Telephone follow-up(2016)</th>
<th>Telephone with APP follow-up(2017)</th>
<th>P</th>
<th>X²</th>
</tr>
</thead>
<tbody>
<tr>
<td>The number of discharged patient [n]</td>
<td>4503</td>
<td>4695</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The number of follow-up patient [n (%)]</td>
<td>4201 (93.3%)</td>
<td>4518 (96.2%)</td>
<td>0.000*</td>
<td>42.052</td>
</tr>
<tr>
<td>The rate of the satisfied patient [n (%)]</td>
<td>4016 (95.6%)</td>
<td>4432 (98.1%)</td>
<td>0.000*</td>
<td>44.359</td>
</tr>
</tbody>
</table>

Note: P<0.01 is considered statistically significant difference.

4. Discussion

The traditional follow-up is that the hospital can obtain the feedback from patients and their families through various channels in the process of patients’ return visit, which can reflect the service level of all departments of the hospital comprehensively, impartially and objectively. Among them, the traditional follow-up method adopted by most hospitals is telephone follow-up, in which way not only we can directly communicate with patients, shorten the distance between doctors and patients, but also it help to communicate more actively. At the same time, we can directly obtain the deficiencies of the software and hardware of the hospital and the service of doctors and nurses, so as to improve the service quality and improve the level of medical care. A lot of foreign scientific research and clinical work get the follow-up results through telephone follow-up. For example, Lushaj EB [10], Beaver K [11] and Johnson NA [12] all adopted the method of telephone follow-up in their studies, indicating that telephone follow-up is a convenient, efficient and effective follow-up mode recognized by the medical community. Although telephone follow-up is widely used, there are many deficiencies. Firstly, there are many uncontrollable factors, such as incorrect telephone number or replacement, and inappropriate follow-up time.

Due to many uncontrollable factors of telephone follow-up, the success rate of telephone follow-up reported by many domestic centers is uneven. Kuangxuyuan [13] found that the average success rate of telephone follow-up was only 36.1% in a study of 1635 cases of lung cancer patients who were followed up by telephone. LAN xiping [14] reported the success rate of telephone follow-up as high as 83.6%. Secondly, most of the telephone follow-up personnel in medical centers are nurses. Even though a few hospitals have full-time follow-up doctors, they are not the management doctors of patients. They do not have a thorough understanding of patients’ conditions, and there are still some limitations in communication. Furthermore, telephone follow-up is a process in which the hospital takes the initiative to contact patients, and the personnel engaged in telephone follow-up must be medical staff with medical background, which requires a large investment of manpower, resources and time. Therefore, we added mobile phone APP follow-up on the basis of telephone follow-up to make up for its shortcomings, for the follow-up efficiency of our hospital being increased from 93.3% in 2016 to 96.2% in 2017 (P<0.01). Mobile APP follow-up is quite different from the active follow-up by telephone. Patients can give feedback to their management doctors about their own diseases at any time, which can achieve...
the satisfying treatment. After incorporating mobile APP into follow-up management, the satisfaction of discharged patients in our hospital increased from 95.6% in 2016 to 98.1% in 2017 (P<0.01).

Mobile apps have unique advantages. We summarize two aspects as following:

(1) Mobile phone Apps have achieved certain results in the intervention of patients with various diseases, such as diabetes, hypertension, asthma, obesity and other diseases in various fields [15]. Lynne, Kevin, Guillaume, Megan and others developed different mobile apps to strengthen the management of patients’ blood glucose, and achieved remarkable results [16-19]. Liu et al. have improved the prognosis of COPD patients by using APP [20]. Margaret [21], Burns [22] et al. used the APP to significantly reduce the number of adverse emotional symptoms and anxiety symptoms in patients who were diagnosed with depression or depression. Since mobile APP has its unique advantages for patients with diseases in various fields, we believe that patients with out-of-hospital follow-up can improve their self-efficacy and self-management ability through mobile APP, which is good for disease recovery. Therefore, mobile APP can be accepted by the majority of patients in the follow-up management, and such active use makes patients, medical staff and hospitals win a win-win situation.

(2) The follow-up mode of mobile phone APP can establish the information database of postoperative follow-up patients. ① To use the big data of patients themselves to provide health guidance for patients. ② Through analysing single disease data, we can find out the related rules of single disease. ③ Form massive data, we can find some useful knowledge and help to guide the diagnosis and treatment. Mobile APP on the health care, the patient and the general public through all-round services, can get huge amounts of data accumulated for a long period of time, and through the massive amounts of data, analyse and obtain the valuable information, such as doctors, patients, and then help to improve the level of the doctor’s daily diagnosis and treatment for the patient’s rehabilitation, which is a mobile APP itself unique value and vitality [23].

(3) According to research statistics, the market size of mobile medical care is growing rapidly year by year, from 1.58 billion yuan in 2011, and it will be to 13 billion yuan in 2017 [24].

For people who use mobile medical apps, they can get mobile medical services more conveniently [25]. However, mobile APP follow-up still has many shortcomings, which are reflected in the following aspects: ① the performance of terminal devices is not uniform. The mobile APP system is based on the mobile devices of users. However, due to the great difference in the performance of personal mobile devices, the clarity of medical signals collected varies greatly, which affects the accuracy of doctors’ diagnosis. ② the data of patients need to be transmitted through the network. How to ensure the timely medical treatment of patients while protecting patients’ personal privacy, and also put forward higher requirements for doctors’ professional ethics and ethics [26]. ③ it is difficult for the elderly who contact smartphone less to fluent use mobile phone APP.

In conclusion, the new follow-up mode of mobile phone APP can improve clinical follow-up services, improve patient compliance, help reduce the rate of follow-up loss, facilitate more convenient and effective doctor-patient communication, and facilitate the recovery of patients. Also it help to establish the informationized follow-up system. To use the big data of patients themselves to provide health guidance for patients. Through analyzing single disease data, we can find out the related rules of single disease. From massive data, we can find some useful knowledge and help to guide the diagnosis and treatment.

References


