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The use of weekly text messaging over 6 months was a feasible method for monitoring the clinical course of low back pain in patients seeking chiropractic care

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Abstract

Objective: This study critically evaluates a new method of collecting frequent data using mobile phones and text messages. Fluctuating conditions such as low back pain (LBP) need frequent monitoring to describe the clinical course in detail and to account for individual and subgroup variations.

Study Design and Setting: In this multicentre prospective observational study, 262 subjects with nonspecific LBP were followed with weekly text messages for 6 months, with the question ''How many days this previous week has your low back pain been bothersome?'' The text replies were instantly recorded in a data file to be merged with baseline and follow up data (age, gender, pain intensity, duration, and self- rated health) collected through ordinary questionnaires. The response rate, user-friendliness, and compliance of this method were evaluated.

Results: The mean response rate for the text messages throughout the study was 82.5% and was unaffected by season. The method was found to be user friendly. Dropout was not affected by age and gender, but compliance was possibly somewhat affected by outcome.

Conclusion: Weekly text messages are a useful method of data collection to examine the clinical course of LBP in the primary care sector.

Keywords: Low back pain; Clinical course; Bothersomeness; Frequent data collection; Text messages; Compliance

1. Introduction

In prospective studies, data are often collected only at a few instances, that is, at baseline and follow-up. A difference in the outcome measures at these time points is then considered a change in the condition. However, if the course is fluctuating, details of relapses and remissions cannot be captured by measuring only the two occasions. The measures may indicate stability, when in fact the patient has been feeling either worse or better between these two time points. Conversely, a difference could merely reflect a temporary fluctuation in an otherwise stable condition. To accurately describe the individual course in a fluctuating condition, a more dense data collection may be suitable.

Low back pain (LBP) is considered to be a fluctuating condition, recurrent in a large proportion of cases and truly persistent only in some [1,2]. Several authors have pointed out the need for exploring the details of the course of LBP [2−4], as little is known about this subject. Frequent data collection would therefore be advantageous to increase our knowledge into the extent and frequency of LBP events. However, questionnaire surveys are not ideal for collecting frequent data as they often yield poor response rates [5,6]. To improve response rates, several mailings are often needed, which increase the cost.

LBP is often measured by quantifying pain intensity or the resulting disability. However, recording only pain

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What is new?

- This study has tested a new method of collecting frequent data with mobile phones and text messages and found it feasible in a clinical setting.
- The method yielded a mean response rate of more than 80% for weekly measures over 6 months.
- Text messages as a data collection tool avoids the dropping out of younger men, which is common in surveys.
- With this method, detailed information on individual variation and fluctuating conditions can be gathered at any desired frequency, instantly accessible to the clinician/researcher.
- Natural and clinical course can be evaluated in large population samples.

intensity at two time points may neither adequately describe the impact to the patient nor the development over time [7]. Furthermore, when respondents are asked to recall a past pain experience, memory decay inevitably biases the measure. Again, using dense data collection points, impact of the condition may be captured and recall bias would be minimized.

Data collection in clinical studies has now reached a new era. With mobile phones being ''everyman's'' property in many countries, data can be collected cheaply and very frequently by text messages (SMS). Using this technology, data collection is possible at a monthly, weekly, daily, or even an hourly basis. The method is promising also in terms of low costs, minimal time consumption, and minimal data handling [8]. In a recent Danish study, the recall bias associated with this method was evaluated in a comparison with responses from a telephone interview [8], and agreement between the methods was found to be good for 1-week recall periods. Another Danish study found that text message responses concerning pain days and pain intensity followed a similar pattern over time [9].

In summary, collecting data frequently may be useful in fluctuating conditions as individual variation can be monitored at any desired rate. Using mobile phones is associated with little cost, accessibility to large populations, instant awareness concerning the condition on behalf of the clinician, and minimal data handling for the researcher.

However, when a new method is introduced, it should be evaluated to ensure applicability. In the case of gathering data with text messages, the factors influencing the response rate and compliance have not yet been evaluated and neither has user-friendliness. Before this method can be reliably used in different settings, it needs further scrutiny.

2. Aim and objectives

The overall aim of this study was to critically evaluate a new method of collecting data using text messages. The objectives were to evaluate the response rate, including the association with season, user-friendliness, and compliance in a population treated for LBP. The clinical aspect of this study will be reported elsewhere.

3. Methods

3.1. Recruiting chiropractors and subjects

The data were collected in a prospective multicentre study that aimed to describe the clinical course of nonspecific LBP. In the present report, only variables relevant to the evaluation of the method are presented.

To recruit subjects with LBP, chiropractic clinics were chosen as LBP is the most commonly treated condition by chiropractors in Sweden [10]. A convenience sample of chiropractors, all members of the Swedish Chiropractors' Association (in Swedish: Legitimerade Kiropraktorers Riksorganisation), was recruited in an earlier study [11].

The chiropractors were asked to recruit 10 participants each in the study. Subjects were included provided that they had nonspecific LBP with or without leg pain, were of working age (usually between 18 and 65 years old), and that they returned to the chiropractor for at least a second visit. Also, before the present episode of LBP, they should not have been under chiropractic care for the past 3 months. Patients were not recruited in the study if pregnant, unable to understand Swedish, if they did not have a mobile phone, or if they did not know how to text message. Subjects were enrolled from May to December 2008 and followed for 6 months. Patients with specific LBP (i.e., not to be included in the study) would be identified at the first chiropractic visit, which is not recorded in the study. To minimize the burden on the clinicians, subjects identified with nonspecific LBP were recruited in the study at the second visit.

3.2. Measurements

At the inclusion visit, the subjects were informed about the study verbally and in writing. They also received an information leaflet with details of the study's purpose, methods, and length. The text message question was clearly stated. At this visit, the subjects filled in the first questionnaire with a pain drawing [12], self-rated general health (''How would you rate your health?'' Answers given as a 5-point Likert scale ranging from Excellent [1] to Poor [5]'') [13], pain intensity (numeric 11-point scale [numeric rating scale (NRS), anchors at no pain, and worst imaginable) [14], and the EuroQol, EQ-5D (scores ranging from 1.00 = perfect health to 0 = death) [15]. They signed a consent form and sent it all to the research center where the respondents were entered into the computer system for the