



Variation in reporting of pain and other subjective health complaints in a working population and limitations of single sample measurements

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Received 15 September 2003; received in revised form 4 March 2004; accepted 8 March 2004

Abstract

Measuring health complaints by administering a single report is common. Our aim was to assess variation in pain and other subjective complaints over an extended period, whether a single-sample produces representative data, and determine associations between complaints. Health-complaint reports were collected from postal workers at monthly intervals over a period of 32–34 consecutive months (1997–2000). We computed six compound complaint-severity indices of 30 complaint-severity scores (intensity score \times duration score, scale 0–9). In 67% of the scores, the complaints exhibited larger deviation from a reference (12 consecutive reports in the last 24 months of the study period) when using one report from the respective reference period compared with the mean of two consecutive reports. Four consecutive samples were needed to obtain agreement for 95% of the data when the criterion of accepted deviation from the reference was set to ± 1.0 . Neither inspection of graphs nor statistical tests revealed any seasonal pattern or trend on either a group or individual level. The musculoskeletal and psychological complaint-severity indices correlated strongly ($r_s > 0.66$). Correlations between the different somatic indices were generally weak or moderate ($r_s < 0.55$). The initial report produced higher complaint ratings than subsequent reports did. Due to large intra-individual complaint variability and higher complaint-severity level exhibited on the initial report compared to those that followed, measuring subjective health with a single-sample approach does not produce data representativeness for average complaints over a period. More than two samples should be collected when the purpose is to reveal changes in health.

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Keywords: Complaints; Musculoskeletal; Psychological; Variability; Monthly reports

1. Introduction

Several factors may affect the quality of measurements made of subjective complaints. Both the variation in complaints over time and the methods of measurement may invalidate the data. Health complaints vary over time due to variations in exposure to pathogenic factors, variations in underlying somatic condition, and possibly systematic seasonal changes. With subjective measures, additional sources of variation are changes in the perception of somatic and other sensations (Watson and Pennebaker, 1989; McDermid et al., 1996), processes that alter ways of coping with symptoms, and reporting behaviour (MacLeod et al., 2002).

A short recall period should produce the most accurate data. However, the data merely represent a snapshot of

the most recent situation of the respondent and may not be representative of a long-term condition. This may be a serious problem when a condition exhibits large fluctuations, as pain disorders do (Jensen and McFarland, 1993). Longer reporting periods may introduce recall bias, due to the factors mentioned above (Marshall et al., 1995).

In addition to the variation in the complaints themselves, the initial response to a questionnaire may be influenced by other sources of variation. The respondents receive attention during the investigation and are asked to direct their attention to symptoms and complaints that they may not have been consciously aware of before. Problems or issues receiving attention (e.g. by news coverage) at the time of the investigation may influence responses within the study population. These factors may render the single-sample reporting of complaints prone to errors and systematically confound associations between exposures or treatments and symptoms.

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Psychological factors may contribute to the reporting of complaints. An important issue in assessing health complaints is the extent to which subjectively reported symptoms represent specific organ affliction rather than a generalized tendency to experience and report discomfort or negative sensations (Watson and Pennebaker, 1989; McDermid et al., 1996; Macleod et al., 2002). Several syndromes characterized by symptoms and functional impairment are not supported by physiological findings (see Barsky and Borus, 1999 for a review). The psychophysiological mechanisms contributing to these syndromes may play a role in the perception of any symptom, e.g. forearm pain (Hall and Morrow, 1988). On the other hand, psychological mechanisms may affect the reporting of symptoms in healthy subjects. Cognitive schemata may determine whether a subject recalls and decides to report a symptom that does not impair function or cause concern (Cope et al., 1994). Furthermore, depression, anxiety and distress may influence the subjective appraisal and reporting of symptoms (Halder et al., 2002). Hence, the association between psychological and somatic complaints and the possible generalized tendency to report complaints need to be elucidated in order to improve knowledge of subjective health complaints.

The objectives of the present study were (i) to assess variations in subjective health complaints over an extended period, (ii) to determine whether the single-sample method produce data that represent the respondents' subjective complaints over time, and (iii) to determine whether there are associations between the reporting of psychological and somatic complaints in a working population.

2. Subjects and methods

2.1. Study design and procedures

This study is a part of a prospective randomized intervention study (1997–2000) comprising a comprehensive questionnaire (conducted in February each of the three years), monthly health-complaint reports over 32–34 months (starting in March, April, or May 1997), two medical examinations (at one-year intervals), observation of the work routines of each participant in their workplaces (once or twice a year for 2 years), annual monitoring of electromyography, blood pressure and heart rate during a complete working day (over 2 years) and during standardized laboratory tests (over 3 years), and 12 week intervention programs (from September to December 1997).

Annual questionnaires and monthly reports were distributed at the workplaces during the study. They were sent by mail to those on long-term sick leave and to those no longer working at the post offices included in the study. Before filling in their initial monthly health-complaint report, all participants were given detailed instructions on items and scales.

The present data were obtained from the monthly health-complaint reports (1997–2000) and the comprehensive questionnaire (the socio-economic situation in 1997). The Regional Ethical Committee for Medical Research approved the study.

2.2. Subjects

Participants were recruited from 11 post offices in Oslo. The inclusion criteria were: permanent employment at the post offices, working at least 19 h a week, counter service as their main work function, and age less than 61 years. The exclusion criteria were: any known systemic diseases, pregnancy, and participants' self-professed inability to maintain a seated position for 3 h.

Written, informed consent to participate was acquired from the 104 subjects (67 women) out of a total of 116 employees who met the inclusion criteria. Subjects were then excluded due to altered work functions ($n = 13$), pregnancy ($n = 5$), or long-term sick leave ($n = 6$) before the first collection of health-complaint reports. One person dropped out. The study sample therefore consisted of 79 participants (51 women) for the initial report. In the pre-intervention period, further exclusion was due to altered work functions ($n = 15$), pregnancy ($n = 2$), and lower back pain ($n = 2$). No participants were excluded after the interventions started, but 18 subjects dropped out during the intervention and post-intervention periods due to changes of work ($n = 4$) and for unknown reasons.

The 60 subjects still participating at the start of the intervention programs were randomly assigned to two intervention groups and one control group. They were stratified according to their neck and shoulder complaints reported at the first medical examination (affliction: daily complaints or visual analogue scale >10 on a 100 mm line), sex, and their work place. The interventions, described by Eriksen et al. (2002), consisted of stress management training (SMT, $n = 19$) and an integrated health practice program (IHP, $n = 22$) and were carried out during the participants' working hours. Approximately half of the subjects participated in less than 50% of these sessions. According to the participants, non-compliance was mainly due to the personnel-situation at their work places during the intervention period.

The median age of participants at the time of the initial report was 35 years (range 24–60), median years of postal work 12 (range 3–29), median years of present work tasks five (range 1–5), and median days of sick leave during previous six months was six (range 1–135). The mean period of formal education was 12 years (SD 2) and mean number of paid working hours was 37.4 (SD 2.6). Forty-two percent of the workers were smokers.

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