International Journal of Medical Informatics 117 (2018) 1–5

Contents lists available at ScienceDirect

International Journal of Medical Informatics

journal homepage: www.elsevier.com/locate/ijmedinf

Reliability of a Canadian database for primary care nursing services' clinical and administrative data

Émilie Dufour[a,*], Arnaud Duhoux[a,b], Damien Contandriopoulos[c]

[a] Faculty of Nursing, Université de Montréal, Marguerite-d'Youville Campus, Montréal, QC, H3C 3J7, Canada
[b] CR-CSIS (Centre de recherche Charles-Le Moyne - Saguenay-Lac-Saint-Jean sur les innovations en santé), Université de Sherbrooke, Longueuil Campus, Longueuil, QC, J4K 0A8, Canada
[c] Faculty of Nursing, University of Victoria, Victoria, BC, V8W 2Y2, Canada

ARTICLE INFO

Keywords:
Clinical and administrative data
Electronic database
Medical record
Nursing management
Primary care
Reliability
Concordance

ABSTRACT

Background: The use of electronic clinical and administrative data can be an advantageous source of information for assessing nursing performance in primary care. In Québec (Canada), the I-CLSC electronic database could be used to measure performance indicators. However, little is known about the reliability of the data contained in this database. The objective of this study was to assess the reliability of the clinical and administrative data contained in the I-CLSC electronic database based on the data entered in medical records.

Methods: We used a longitudinal design for this study. A sample of 100 patients who had experienced 107 episodes of wound care were randomly selected from all patients who had two or more consultations during the year 2015. The paper records were used as reference. We collected data regarding eight nursing sensitive indicators from both sources. We assessed the concordance between the electronic data and the paper records by measuring inter-rater agreement.

Results: Six of the eight indicators showed a percentage agreement ≥ 85%, and kappa scores between 0.7 and 1.00 ($p < 0.001$), indicating high to perfect levels of agreement between the two data sources. Two indicators presented fair kappa scores.

Conclusion: This database provides reliable data relating to the organization of care but shows lower reliability for specific acts performed by nurses in primary care. This existing database can be used to assess, manage and improve certain dimensions of nursing performance in primary care.

1. Introduction

Clinical and administrative databases are a widely available source of data used for both management and research [1–3]. There are several advantages associated to the use of electronic databases to measure and assess healthcare quality [1,4]. Using existing databases for research or management is inexpensive, avoids creating additional work, and provides access to a wide range of information on a large pool of patients [1,2]. In nursing care, access to reliable data is a concern raised in most of the studies that have sought to assess the performance and quality of care [5–7].

The I-CLSC program is an electronic information system that collects data generated by professionals working in local community health centers (CLSC) in the province of Québec, Canada. CLSC are public organizations, both financially and in terms of governance [8]. This type of organization offers a range of primary care services based on local needs [9] and includes professionals such as nurses, physicians, nutritionists, physiotherapists and social workers [8]. The primary mandate of the I-CLSC database is to supply managers with data that can be used to improve the quality and efficiency of services provided to users by developing better-adapted programs [10]. From an operational standpoint, the I-CLSC database is used for standardized collection of data on services provided and on the profiles of users. This database provides information regarding sociodemographic and health information that can be used to analyze a request for services, initiate an episode of care and coordinate care that requires a multidisciplinary approach. The interventions performed by the professionals are to be recorded in the system. All professionals providing care to patients, including nurses, are required to enter manually their interventions using a pre-determined bank of codes. Professionals must fill the information in patients' medical records as well, which are mostly paper files [8]. The I-CLSC information system is currently the only database

Abbreviations: CLSC, local community services centre; LPN, licensed practical nurse; RN, registered nurse

* Corresponding author at: Faculty of Nursing, Université de Montréal C.P. 6128, succ. Centre-Ville Montréal, Québec, H3C 3J7, Canada.
E-mail address: emilie.dufour.3@umontreal.ca (É. Dufour).

https://doi.org/10.1016/j.ijmedinf.2018.05.007
Received 10 January 2018; Received in revised form 4 May 2018; Accepted 20 May 2018
1386-5056/ © 2018 Elsevier B.V. All rights reserved.

available to primary care managers. To our knowledge, no study has yet examined the reliability of the data contained in this clinical and administrative database, and very few have studied equivalent computerized databases.

Previous reliability studies have mostly sought to assess the quality of medical records data [11–14]. A few others have aimed to assess the accuracy of self-reported data based on the data collected in administrative databases or medical records [15–17]. Only few studies specifically assessed the quality of administrative data based on data entered in medical records [18–21]. In all cases, levels of reliability varied depending on the type of data being assessed. Objective data, such as exam results, generally showed better levels of reliability than subjective data, such as the content of counseling sessions [11,14,19]. Those reliability studies have all emphasized the potential for using electronic data to measure quality of care in different settings. According to these studies, further research should focus on assessing the consistency of the data over time [11,21].

In nursing care, previous studies that assessed the reliability of electronic data have mostly compared the concordance between data collected by nurses and data collected by external reviewers [22,23]. In both studies, findings showed relatively good levels of reliability, which supports the growing interest of using electronic databases for the measurement of nursing-sensitive indicators [22,23]. However, to our knowledge, no study has yet assessed the reliability of nursing-sensitive data based on a review of medical records.

The objective of this study was to assess the reliability of the clinical and administrative data contained in the I-CLSC database using medical records as the gold standard. This study was part of a larger research project that aimed at measuring and validating performance indicators in primary care nursing based on clinical and administrative data contained in the I-CLSC information system.

2. Material and methods

2.1. Study design

For this study we used a longitudinal design so that we could assess the reliability of the data based on comprehensive course of care. Eight performance nursing-sensitive indicators were measured over a one-year period based on episodes of wound care. We used wound care as a tracer case for this study considering it is one of the major and most costly tasks in primary care nursing settings [24,25]. The unit of analysis was the care episode, and a single patient could present more than one episode during the study period.

2.2. Sample

We randomly selected a subsample of patients from a larger study in which we aimed to assess the validity of process nursing sensitive indicators based on their association with outcome indicators from a sample of patients that presented at least an episode of wound care in the year 2015. 100 patients presenting 107 episodes of wound care were included in our sample for the current study. We conducted the reliability study based on the episodes of wound care contained in the records of this sub-population of 100 patients (n = 107). We measured two outcome indicators—frequency and intensity—from a sample of only 77 episodes, as their definition and operationalization required a minimal episode duration of eight days (Fig. 1).

2.3. Description of indicators

Eight nursing-related indicators were operationalized based on wound care guidelines [26–32]. Five of these indicators were process-related: 1) nursing follow-up; 2) relational continuity; 3) teaching; 4) initial assessment; and 5) consultation with a specialized nurse. Three indicators were outcome-related: 1) frequency of consultations; 2) duration of the care episode; and 3) intensity of services use.

2.3.1. Nursing follow-up

Nursing follow-up refers to the type of professional providing care, which can be either an RN or an LPN [26]. This indicator was measured as the number of episodes in which a nurse was the type of professional encountered in at least 75% of the consultations.

2.3.2. Relational continuity

Relational continuity refers to regular follow-up by the same professional, such that a therapeutic relationship is created, and optimal follow-up is provided [26,27]. Continuity was measured as the number of episodes in which at least 50% of the consultations were with the same professional.

2.3.3. Teaching

Teaching refers to educational activities provided by professionals to patients and/or families on wound management and preventive factors [27,30,32]. This indicator was operationalized as the number of episodes in which at least one teaching session was provided.

2.3.4. Initial assessment

Initial assessment refers to the clinical assessment performed by the nurse at patient's first visit [27–30,32]. This includes collecting information on the reason for the visit, the patient's health history, overall health status, and a description of the wound parameters. The assessment was measured as the number of episodes in which an assessment was carried out but the nurse on the first visit [27,32].

2.3.5. Consultation with a specialized nurse

A specialized nurse refers to a nurse who has completed additional and advanced training in wound care and who provides this type of care substantially more often than do primary care nurses [26]. This indicator is operationalized as the number of care episodes with at least one consultation with a nurse specialized in wound care [26].

2.3.6. Frequency

Frequency refers to the time elapsed between dressing changes performed by nursing personnel during a single episode. As of the second week of consultation, guidelines recommend generally limiting the frequency of dressing changes when possible [26,27,31]. Frequency was measured as the number of care episodes in which no more than three consultations a week as of the second week of consultation were provided.

2.3.7. Duration

This indicator is related to time elapsed for complete healing of the wound [31,32]. Duration thus refers to the number of days between the first and last consultations. A maximum treatment duration of six weeks is usually targeted. The indicator was measured by the number of care episodes with a duration of 42 days or less.

2.3.8. Intensity

Intensity of services use refers to the number of consultations occurring in an episode. This outcome indicator is produced by combining the frequency and duration indicators; it is used to identify more precisely the distribution of consultations over a single episode. According to the criteria identified for these two indicators, a maximum number of 22 consultations is expected. Intensity was therefore operationalized as the number of episodes including 22 consultations or less.

2.4. Data collection

The I-CLSC database contains information on each patient's episode, from the first consultation for a health problem to the final discharge [10]. Each professional is assigned an identification code, so that every

Download English Version:

https://daneshyari.com/en/article/6926154

Download Persian Version:

https://daneshyari.com/article/6926154

Daneshyari.com