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Evaluation of the impact of support for nursing research on scientific productivity in seven Italian hospitals: A multiple interrupted time series study

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SUMMARY

Background: Nursing research is not well-developed in Italy, and knowledge of the methodologies for conducting research is lacking. In several hospitals, including those in which this study was conducted, a research center has been established to support and educate nurses on how to conduct clinical research.
Aims and Objectives: In this observational study, we sought to assess whether establishing a support center for nursing research has resulted in an increase in scientific production in terms of the numbers of protocols approved (primary outcome), articles published and nurse authors involved in the publications (secondary outcomes).
Design: Multiple interrupted time series.
Methods: Data from 2002 to 2012 were collected in seven hospitals. Research centers have been established at various times in only four of these hospitals.
Results: A statistically significant increase in the primary outcome (the number of protocols approved by the Research Ethics Committee in which the principal investigator was a nurse) was observed in two hospitals approximately 2 years after establishing a research center.
The number of nursing research articles published in scientific journals with an impact factor increased but was not statistically significant. Finally, the number of nurse authors increased significantly in two hospitals with support units. Definitive conclusions could not be reached for the other two experimental hospitals because notably few post-intervention data were available. In the control hospitals, the scientific production outcomes did not change.
Conclusions: This study shows that establishing a support center for nursing research inside hospitals can facilitate the production of research.

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1. Background

The value of nursing research is strongly recognized, and there is a growing interest in the promotion of nurses' research activities (Corchón et al., 2010).

Furthermore, the development of nursing research has become increasingly necessary as new and broader healthcare and economic problems arise. Nurses are increasingly expected to broaden their knowledge and to base their professional practice on methods and tools that draw on research and produce evidence of effectiveness (Parahoo and McCaughan, 2001; Díaz et al., 2004; McCance et al., 2007).

There is no common strategy for increasing research. Some institutions have concentrated on training in research methodology; others have favored evidence-based practice. Institutions have established support units that provide training and, assisted by experts, apply what has been learned during the training programs in the practice context (Chiari et al., 2012; Forni et al., 2012; Wilson et al., 2013; Mitchell et al., 2015). Few studies can be found in the literature that evaluate the usefulness and efficacy of these methods to develop research capability. Many studies have primarily investigated barriers to using research (Hutchinson and Johnston, 2006; Atkinson et al., 2008).

Few studies have examined the efficacy of innovative strategies for overcoming these barriers. However, assessing efficacy is a methodological challenge because of the difficulty in identifying dependent variables. Several studies in the scientific literature (protocols, posters, and publications) indicate the most objective variables and also underline the difficulties in identifying those variables (Perry et al., 2008; Wilson et al., 2013). The importance of education to develop an awareness of research has been referred to in several works (Hunt, 1981; Adamsen et al., 2003; Olade, 2004); the usefulness of providing an expert/leader working alongside the personnel and assisting them in producing healthcare research has also been cited (Clifford and Murray, 2001; Czerwinski et al., 2004; Corchón et al., 2011). However, the results are questionable regarding the usefulness of these interventions because these studies either included small sample sizes or had a brief follow-up period and weak study designs. In all of these studies, self-administered questionnaires were used to measure the effectiveness of the person's suitability and capacity for research. Many of these studies concluded that it is necessary to evaluate more concrete outcomes using studies with a long follow-up to increase the scientific productivity of nurses involved in programs aimed at promoting research (Parahoo and McCaughan, 2001; Adamsen et al., 2003; Perry et al., 2008; Corchón et al., 2011).

Currently, in Italy, the development of nursing research is sporadic, particularly in certain regions. Despite notable efforts by some organizations, authors, etc., there is little tradition, little culture and no common strategy to conducting research (Di Giulio and Saiani, 2012).

In northern Italy, some hospitals have developed an awareness that has encouraged pathways for growth in the field of clinical research. Moreover, in some of these hospitals, training programs have been established to train nursing research methodology, and support units have been created to facilitate the application of what has been learned directly in clinical practice. The purpose of this observational study was to assess whether the establishment of a support unit for nursing research inside Italian hospitals has increased scientific productivity by nurses in recent years.

2. Methods

This study was approved by the Independent Research Ethics Committee of the coordinating center of the research project.

2.1. Goal

2.1.1. Primary Goal

To assess the effect of support projects for nursing research on the number of protocols approved by the Research Ethics Committee (REC) where a support center for research has been established compared to three other hospitals in the same region in which no facilitation program has been established.

2.2. Secondary Goals

- To quantify the publication of nursing research in scientific peer-reviewed journals with an impact factor.
- To measure the number of nurse authors involved in the publications.

2.3. Study Design

Scientific productivity outcomes (number of study protocols approved, publications, and nurse authors) were assessed using a multiple interrupted time series study design. There were seven hospitals involved, each with similar organizational characteristics: the intervention occurred in hospitals A (300 beds), B (1500 beds), C (50 beds) and D (950 beds) whereas no intervention occurred in hospitals E (600 beds), F (980 beds) and G (100 beds). An intervention analysis was performed on each hospital/outcome time series, separately and independently, to identify a possible structural change in the reference period (from 2002 to 2012), regardless of the knowledge of the year of intervention setup. No direct group comparison was performed; hospitals E, F and G were not used in a formal/classic comparison as controls. The procedure to locate a structural change (if existing) was applied independently for each hospital, both those from the intervention group and the non-intervention group; given similar pre-intervention outcome behaviors (mainly time series composed only by values equal to 0), this analysis aimed at highlighting whether a change was observed for experimental hospitals (and not for controls) during the few years after an intervention was performed. This methodology was chosen both because of the unavailability of alternative procedures in this setting (e.g., ARIMA, see "Statistical Analysis" section) and because of the advantage of being independent from knowledge of the intervention year for the treated hospitals.

2.4. Context

This research involved seven hospitals that are training centers for the Faculties of Medicine and Surgery, with 50, 100, 300, 600, 950, 980 and 1500 beds, respectively, in northern Italy.

All of the hospitals are publicly funded and operate under the same health service system.

2.5. Intervention

The intervention involved establishing a "Research Center/Unit for Healthcare Professions" dedicated to the development of research projects related to problems arising from clinical practice; these centers were coordinated by a nurse with expertise in nursing research. The center/unit also provided training in clinical research methodology. At least 20 teaching hours were provided through courses in basic methodology and advanced research methodology. The latter dealt with establishing research protocols and also included field training. In addition, the center/unit offered support to individuals and groups undertaking research programs. The materials and human resources used to form the support units are summarized in Table 1.

The intervention was applied in only four of the hospitals in this study (hospitals A, B, C and D). In addition, the intervention was implemented at different times in each hospital. No intervention was made in the remaining hospitals (hospitals E, F and G) before the end of the study. Table 2 outlines the years in which the intervention was introduced and the length of the intervention in the different settings.