

SHORT PAPER: NURSE MANAGEMENT OF "SAME DAY" CONSULTATIONS FOR PATIENTS WITH MINOR ILLNESSES. EXPERIENCES OF AN EXTENDED PROGRAM IN PRIMARY CARE IN CATALONIA

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DEBIE KRALIK

Senior Editor

Journal of Advanced Nursing

Dear Professor Kralik,

Enclosed please find the revised version of our manuscript entitled "Nurse management of "same-day" consultations for patients with minor illnesses. Experiences of an extended program in primary care in Catalonia". The following changes, which are in red font in the revised version, have been made according to the comments of the Editor and the criticisms of the reviewers.

Editor's Comments

- The revised version now adheres to the guidelines of the Journal. As suggested, particular attention has been paid to the modification of the Methods section.
 We've maintained the section describing the program, as recommended.
 References, headings, and tables have been reformatted according to guidelines.
- 2. The suggestion on the importance of patient satisfaction has been taken, and the sentence in the Discussion has been modified accordingly (page 9 of the revised manuscript).
- 3. Figure 1 has been deleted.
- 4. According to your suggestion, the conclusion has been expanded (page 12 of the revised manuscript).

Reviewer 1

- 1. The redundant sentences of the Discussion similar to those of the Results section have been deleted.
- 2. Chi-squares are now shown in the context.

Reviewer 2

- 1. The substitution of Obtention of data by data sources has not been made because the Results section has been modified according to the Instructions for Authors. The subheading of the paragraph is now Data Collection.
- 2. Maintenance of patient's confidentiality is a key issue that was not mentioned in the first version of the manuscript. In our study the confidentiality of the patients was guaranteed, as indicated in page 6 of the revised manuscript.

We appreciate your comments and those of the reviewers that have contributed to improve markedly our manuscript. We hope that you will find it now suitable for publication in *Journal of Advanced Nursing*.

Sincerely yours,

ABSTRACT

Aims: This paper is a report of a study to assess the feasibility and efficacy of a program of nurse management for patients requesting same day consultation for minor illnesses in primary care. **Background:** The efficacy of such programs has been demonstrated in randomized studies but there is little information on these programs in highly-populated areas. **Methods:** Patients seeking same day consultation for one of 23 pre-selected minor illnesses(16 for adult, 7 for pediatric patients) from March-2009 to April-2010 were seen by trained nurses who followed predefined algorithms. If signs of alarm were detected, patients were referred to a general practitioner. Findings: A total of 629,568 consultations were performed, 575,189 in adults and 54,379 in pediatric patients. Case resolution was achieved in 61.8% of adult and 75.6% of pediatric patients. In adults, the highest resolution rates(>90%) were obtained for burns, skin injury, and emergency contraception, and the lowest for lower urinary symptoms(46.7%), sore throat(45.7%), pink eye (45.5%), and upper respiratory symptoms (41.4%). In pediatric patients, the highest resolution rates (>90%) were obtained for stomach cramps and burns and the lowest for cough (36.2%). Return to consultation during a 7-day period for the same reason as the first consultation was low, 4% for adults and 2.4% for pediatric patients. **Conclusion**: An extended program of nurse management for same day consultation of patients with minor illnesses showed an acceptably high rate of resolution and low rate of return to consultation. The application of such programs in extensive areas is feasible and effective.

SUMMARY STATMENT

What is already known about this topic

- Randomized studies have found that nurses can provide patients with minor illnesses a high standard of care, similar to that of general practitioners.
- Patient satisfaction is higher with nurses than with general practitioners.

What this paper adds

- An extended program of nurse management for patients with pre-selected minor illnesses requesting same day consultation in largely populated areas is both feasible and effective.
- Nurses were trained and used pre-defined management algorithms.

Implications for practice and/or policy

- Specific programs of nurse management of patients with minor-illnesses should be implemented, particularly in busy primary care centers of highly-populated areas.
- Such programs may also be helpful in diagnosing unrecognized conditions (i.e. arterial hypertension) and for health education purposes (i.e. diet, obesity).

Keywords: Nurses/midwives/nursing, nurse practitioner, primary care, nurse management of minor illnesses

INTRODUCTION

The role of nurses in primary health care has evolved rapidly in the last two decades from performing some basic procedures and providing support to general practitioners to a more active role in decision-making concerning patient's health care and management of specific conditions (Marsh et al. 1995, Horrocks et al. 2002, Herbert et al 2008, Reinhard et al 2009, Rashid et al. 2010). Some of these new roles include management of patients with chronic diseases (i.e. diabetes, asthma, and heart failure), preventive medicine, telephone helplines, and establishing a good liaison between hospital care and primary care (Hagan et al. 2000, Forbes et al. 2009, Sutherland et al. 2009). A role that has attracted considerable interest in primary care is that of nurse management of patients with minor illnesses requesting "same day" consultations. A wealth of evidence derived from both randomized trials as well as observational studies indicates that nurses are able to provide patients with minor illnesses a high standard of care similar to that of general practitioners (Marsh et al. 1995, Myers et al. 1997, Kinnerseley et al. 2000, Shum et al. 2000, Venning et al. 2000). No significant differences were found between patients seen by nurses and those seen by general practitioners with respect to resolution of symptoms, referrals to secondary care, return to consultation, prescription rate, investigations ordered, and patient's reported health status two weeks after the visit. Moreover, patient satisfaction was higher with nurses than with physicians, and nurses provided better information about the illness compared to general practitioners (Marsh et al. 1995, Myers et al. 1997, Kinnerseley et al. 2000, Shum et al. 2000, Venning et al. 2000).

Despite the evidence in favor of the role of nurses in providing care to patients with minor illnesses requesting same day consultation in primary care, introducing this new role of nurses in practice has been difficult in many settings for a variety of reasons. The most important of such reasons include having trouble coping with restrictive legislations, lack of awareness of the general population about nurse's skills, and resistance to change. Here we report an observational study assessing the results of a recently developed program of nurse management of same day consultations for minor illnesses in a large number of practices in Catalonia during a 1-yr period. The objectives of the study were to assess the feasibility and efficacy of such program.



THE STUDY

Aims

The aim of this study was to assess the feasibility and efficacy of a program of nurse management for patients requesting "same-day" consultation for minor illnesses in primary care in a highly-populated area.

Design

This is a quantitative observational study based on retrospective evaluation of data collected from patients included in a program of nurse management of patients with minor illnesses.

Sample/Participants

All patients requesting "same day" consultation for minor illnesses during a 1-year period (March 31,2009-April 1,2010) were included in the study.

Program of Nurse Management for "same day" consultation of patients with minor illnessess

In 2009 the Institut Català de la Salut (ICS), the main healthcare provider in Catalonia enforced a program of nurse management for patients with minor illnesses requesting "same day" consultation in primary care. Before this program started, patients with minor illnesses requesting same day consultation were seen by general practitioners. This type of consultations represented a major workload for general practitioners. The program was carried out in 284 primary care practices attending a population of approximately 5,800,000 inhabitants in Catalonia, in northeast Spain.

The program was elaborated by a group of expert nurses and general practitioners and consisted of a protocol and 23 management algorithms of very common minor illnesses, 16 for adult and 7 for pediatric patients (tables 1 and 2). Once the elaboration of the general protocol and management algorithms was completed, several training

sessions were performed in all practices before the implementation of the program began. The protocol included the following: assessment of main signs and symptoms, recognition of previous health problems and their treatments, identification of the main reason for consultation, and application of predefined management algorithms. The algorithms included signs of alarm to identify patients with a potentially severe condition requiring consultation with a general practitioner, which was always available in each practice.

Once the program started, all patients seeking "same day" consultation were initially seen by a nurse. All nurses of each practice participated in the program in turns, so that there was one nurse dealing with these patients 5 days per week in all practices. If the patient's condition was included in one of the 23 minor illnesses with a predefined management algorithm, the nurse followed the algorithm. If signs of alarm were not present, the nurse completed the management algorithm, which in some cases required drug prescription. If signs of alarm were detected, the nurse referred the patient to the general practitioner for a same day visit. The protocol and management algorithms were included in the computerized medical system so that all steps could be followed easily at the time of writing in patients' electronic medical records.

Data collection

Data from all patients requesting consultation for one of the 23 predefined minor illnesses with treatment algorithms during the one-year study period were obtained through the computerized medical record system.

Ethical considerations

The study was approved by the Institutional Review Board of the Institution. The study was made according to current regulations about data confidentiality. In the database, codes were used instead of patient's names.

Data analysis

The main outcome measure of the study was case resolution. Case resolution was defined as completion of the management algorithm without the need of referral of the patient to the general practitioner. The secondary outcome measure was return to consultation, which was defined as requirement of new consultation in primary care, either with a nurse or general practitioner, for the same reason as the first consultation within a 7-day period. Comparison of frequencies of the different outcomes was performed with the chi-square test. The analysis was performed using the SPSS 15 for Windows (SPSS Inc, Chicago, IL). Results are reported as percentages with 95% confidence intervals.

RESULTS

A total of 629,568 same-day consultations corresponding to the 23 predefined minor illnesses for adult and pediatric patients were performed during the 1-yr period, which represents an average of 2,469 visits per working day. The most common categories in adult patients were skin injury, upper respiratory symptoms, and sore throat. The list and frequencies of each category in adult patients are shown in table 1. The most common minor illnesses in pediatric patients were skin injury, cough, and runny nose. The list and frequencies for each category in pediatric patients are shown in table 2. Case resolution for minor illnesses in adult patients was achieved in 61.8% of cases. The remaining 38.2% of patients were referred to a general practitioner. The highest resolution rates (greater than 90%) were achieved for burns, skin injury, and emergency contraception, while the lowest resolution rates (lower than 50%) corresponded to lower urinary symptoms, sore throat, pink eye, and upper respiratory symptoms (table 3). Case resolution for minor illnesses in pediatric patients was achieved in 75.6% of cases (p<0.001, as compared with 68.1% in adults). The highest resolution rates (greater than 90%) were achieved for stomach cramps and burns, while the lowest resolution rate (lower than 50%) corresponded to cough (table 3).

Overall, the rates of return to consultation were low. In adult patients, rates ranged between 0.4% and 7.5%, with an average of 4.0% (table 3). The lowest rate of return to consultation was observed in emergency contraception, whereas the highest was observed in burns. In pediatric patients, rate of return to consultation averaged 2.4% (p<0.001, as compared with 4% in adults) (table 3). The lowest rate was observed in diaper rash (0.4%), whereas the highest (9.3%) was observed in burns.

DISCUSSION

The current study has some limitations that should be mentioned. First, it has the problems inherent to retrospective studies. However, it should be emphasized that all data were recorded in the computerized medical record of the patients at the time of consultation using a specifically-designed software system, and data for retrospective analysis were obtained directly from the computerized record system. Second, patients returning to consultation for the same problem were identified through the computerized medical record of each patient. Because the computerized medical records include only information from primary care and not from secondary care, we cannot rule out that some patients could have had consultations in secondary care within the 7-day time period after the initial consultation. Therefore, the actual rate of return to consultation could be higher than that found in the current study. Third, the findings would have been strengthened by assessment of patient satisfaction. Unfortunately, however, patient satisfaction was not assessed in our study. However, it is worth mentioning that all studies that have analyzed patient satisfaction of nurse management for minor illnesses have found very high rates of patient satisfaction, usually higher than those observed when patients are treated by general practitioners (Marsh et al. 1995, Kinnersely et al. 2000, Shum et al. 2000, Venning et al. 2000). In the current study, we report the results of an exceptionally large program of nurse management for patients with minor illnesses requesting same day appointments in a primary care organization covering a highly populated area of Catalonia, in northeast Spain. In Spain, there is no exact equivalent to the nurse practitioner of UK or USA, but nurses get a universitary degree after three years of education in the School of Nursing (this will be changed to 4 years starting in 2010). Therefore, they have a sufficient theoretical and practical background to deal with management of patients with minor

illnesses. On the other hand, in recent years the Spanish legislation has changed and nurses are now allowed to make prescriptions in specific circumstances. Therefore, the extensive available evidence, the educational background of nurses, and the change in legislation paved the way for the implementation of programs of nurse management for patients with minor illnesses in primary care in Spain. Here we report the results of one of the first such programs. Four crucial aspects were taken into account at the time of elaborating the program: 1/ to select a limited number of minor illnesses for adult and pediatric patients; 2/ to prepare management algorithms for each minor illness selected; 3/ to perform specific training sessions aimed at improving the knowledge of nurses about the different minor illnesses and their specific management algorithms, which were embedded in the computerized clinical record system; and 4/ to have a general practitioner always available at each practice for consultation or patient referral.

The results of the current study including over 600,000 patients during a period of one year indicate that nurses can perform "same day" consultations of patients with minor illnesses with high resolution rates and low rates of return to consultation. The most common categories of minor illnesses in adult patients were skin injury, upper respiratory symptoms, sore throat, lower urinary symptoms, acute diarrhea, and back pain, which accounted for approximately 72% of all consultations. In pediatric patients, the most common categories were skin injury, cough, and runny nose, which were responsible for approximately 73% of all consultations.

The highest resolution rates (>90%) in adults were obtained for burns, skin injury, and emergency contraception, whereas the lowest (<50%) were obtained for lower urinary symptoms, sore throat, pink eye, and upper respiratory symptoms. This difference in resolution rates might be related to the fact that the former categories correspond to conditions associated with traditional nurse practice, whereas the latter correspond to

categories that require experience with exploratory maneuvers as well as prescription of drugs which may be less familiar to nurses despite the training sessions performed and existence of management algorithms. Nevertheless, it is important to emphasize that the algorithms of the latter categories had abundant signs of alarm aimed at deriving potentially high-risk patients to general practitioners. Thus, the relatively low resolution rates obtained could be due, at least in part, to strict coping with the management algorithms.

The highest resolution rates (>90%) in pediatric patients were obtained for stomach cramps and burns and the lowest (<50%) for cough. As with adult patients, differences in resolution rates of minor illnesses in pediatric patients might be related to familiarity with the condition and/or strict coping with the management algorithm.

Return to consultation for the same problem within a 7-day time frame was low overall. In adult patients, the rate of return to consultation was greater than 3% only in four categories: back pain, nose bleeding, skin injury, and burns (4, 5.4, 7.2, and 7.5%, respectively). In pediatric patients, the rate of return to consultation was greater than 2% only for skin injury and burns.

There are two important aspects of this study that deserve a comment. First, selection of minor illnesses was made on the basis of simplicity and high incidence. Some minor illnesses chosen were very simple, but nonetheless constitute a major workload for primary care centers, as shown in tables 1 and 2. Therefore, the high resolution rates obtained may be explained, at least in part, on this basis. Second, we believe that management algorithms were crucial to the achievement of high case resolution rates and low rates of return to consultation and the overall success of the program. Moreover, management algorithms were important in the identification of patients who required consultation with the general practitioner.

In conclusion, the results of the current study confirm previous findings from randomized studies indicating that nurse management of "same day" consultation for patients with minor illnesses in primary care is not only feasible but also effective. Our results extend the observations obtained in randomized studies to the daily practice in a large primary care setting indicating that nurse management of patients with minor illnesses is associated with high rate of resolution and low rate of return to consultation. The consistency of the findings of the different studies indicate that nurses should have an important role in the management of patients of acute "minor" conditions and programs of nurse management should be implemented in primary health care to fulfill this role, particularly in busy primary care centers of highly-populated areas. The importance of educating nurses in the diagnosis and management of minor illnesses and the accessibility of management algorithms cannot be overemphasized and appears to be key to the success of this type of programs.

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<u>Table 1</u>. Frequency of minor illnesses in adult patients evaluated in the "same day" consultation nurse program over a 1-yr period classified according to 16 predefined diagnostic categories.

Category	Number of patients
Skin injury	130,989 (22.8)
Upper respiratory symptoms	118,470 (20.6)
Sore throat	67,550 (11.7)
Lower urinary symptoms	49,996 (8.7)
Acute diarrhea	42,431 (7.4)
Back pain	35,059 (6.1)
Increased arterial pressure	23,632 (4.1)
Pink eye	21,485 (3.7)
Burns	18,540 (3.2)
Tooth pain	16,302 (2.8)
Emergency contraception	13,652 (2.4)
Twisted ankle	12,789 (2.2)
Anxiety attacks	10,125 (1.8)
Flu	5,927 (1.0)
Skin fold dermatitis	5,794 (1.0)
Nose bleeding	2,448 (0.4)
Total	575,189

Numbers in brackets are percentages

<u>Table 2</u>. Frequency of minor illnesses in pediatric patients evaluated in the "same day" consultation nurse program over a 1-yr period classified according to 7 predefined diagnostic categories.

Diagnosis	Number of patients
Skin injury	25,140 (46.2)
Cough	8,999 (16.5)
Runny nose	5,664 (10.4)
Diaper rash	4,576 (8.4)
Acute diarrhea	3,980 (7.3)
Stomach cramps	3,262 (6.0)
Burns	2,758 (5.1)
Total	54,379

Number in brackets are percentages

<u>Table 3</u>. Case resolution and return to consultation rates in adult and pediatric patients with minor illnesses seen in a "same day" consultation nurse program over a 1-yr period classified according to predefined categories.

Category	Resolution %	Return to consultation
ADULTS		
Burns	93.5 (93.2-93.9)	7.2 (6.9-7.6)
Skin injury	91.6 (91.5-91.8)	7.5 (7.4-7.7)
Emergency contraception	90.8 (90.3-91.3)	0.4 (0.3-0.6)
Skin fold dermatitis	71.3 (70.2-72.5)	1.4 (1.0-1.8)
Increased arterial pressure	70 (69.4-70.6)	2.4 (2.2-2.7)
Twisted ankle	66 (65.2-66.9)	1.5 (1.2-1.7)
Nose bleeding	64.1 (62.1-65.9)	4.0 (3.2-5.1)
Acute diarrhea	62.1 (61.7-62.6)	1.3 (1.1-1.4)
Anxiety attacks	55.3 (54.3-56.3)	1.4 (1.1-1.7)
Tooth pain	54.1 (53.4-54.9)	1.9 (1.6-2.2)
Back pain	51.4 (50.8-51.9)	5.4 (5.1-5.7)
Flu	51.1 (49.8-52.4)	1.0 (0.7-1.4)
Lower urinary symptoms	46.8 (46.3-47.2)	1.5 (1.3-1.7)
Sore throat	45.7 (45.3-46.1)	1.3 (1.2-1.5)
Pink eye	45.5 (44.8-46.2)	1.3 (1.1-1.6)
Upper respiratory symptoms	41.4 (41.2-41.7)	1.9 (1.8-2.0)
Average	61.8	4.0
PEDIATRIC PATIENTS		
Stomach cramps	92.5 (91.5-93.3)	0.8 (0.6-1.2)
Burns	91.7 (90.6-92.7)	9.3 (8.3-10.5)
Diaper rash	88.8 (87.9-89.7)	0.5 (0.3-0.8)
Skin injury	87.6 (87.2-88.0)	2.7 (2.5-2.9)
Acute diarrhea	67.5 (66.1-69.0)	1.1 (0.8-1.5)
Runny nose	62.3 (61.1-63.6)	0.7 (0.5-1.0)
Cough	36.2 (35.3-37.2)	1.5 (1.1-1.9)
Average	75.6	2.4

Case resolution was defined as completion of the management algorithm without the need of referral to a general practitioner or secondary care. Return to consultation was defined as requirement of new consultation at practices for the same reason within a 7-day period. Categories are classified in decreasing order of resolution. Numbers in brackets are 95% confidence intervals.