Does what nurses do affect clinical outcomes for hospitalized patients: a review of the literature

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Authors' objectives
To identify and describe:

1. Empirical studies of inpatient nursing care quality that evaluate links between nursing care process and health-related outcomes.

2. Nursing care processes for which process-outcome links have been established.

3. Important nursing care processes that have not yet been evaluated.

Searching
Searches were conducted of the computerised databases MEDLINE, CINAHL and Health Planning and Administration for articles on health care quality. References listed in the known literature on the subject were screened, handsearches were conducted of key nursing journals and four experts in the quality of nursing care were asked to identify relevant articles. Primary studies were restricted to those published in the English language.

Study selection
Study designs of evaluations included in the review
Inclusion criteria were not specified in terms of study design. Studies which aimed to study the effectiveness of nursing care processes in improving health related patient outcomes for broadly defined populations of patients entering in-hospital settings were eligible. Included studies used an experimental or quasi-experimental design or were descriptive and evaluated a process-link outcome by determining whether performance of a process/processes increased the likelihood of a good outcome.

Specific interventions included in the review
Nursing care processes within the usual scope of registered nurses were eligible. Interventions were carried out in hospitals (including urban teaching and non teaching, teaching, and rural) or in-home health agencies.

Participants included in the review
Adult patients hospitalised on general care wards (neither ICU nor CCU) for medical-surgical conditions in the United States, Canada, the United Kingdom or Scandinavian countries were eligible. Patients included: elderly patients referred to home health care at discharge; patients with peritoneal dialysis; patients receiving one or more of six medications; patients receiving erythropoietin; patients with congestive heart failure, abdominal hysterectomy, HIV and pneumocystis carinii pneumonia, acute myocardial infarction, pneumonia, cerebrovascular accident, hip fracture, percutaneous transluminal coronary angioplasty, community-acquired pneumonia coronary artery bypass graft, valve replacement; and patients on medical, surgical or bone marrow transplant units.

Outcomes assessed in the review
Studies that included at least one patient-related outcome were eligible.

Data on outcomes were obtained using surveys, from medical or administrative records, or through direct observation. Outcomes used to evaluate the assessment process included: medication, knowledge, pain relief, discharge status, length of stay and mortality. Outcomes used to evaluate problem identification processes included: functional status of patients and the proportion of patients discharged to nursing homes. Outcomes used to evaluate management processes included: health-related patient outcomes (patient self-rated physical status, physical condition, HIV-Quality marker score, iron balance, haematocrit, haemoglobin, bleeding, coronary care unit days, time to sheath removal, time on bedrest, discomfort, medication/health knowledge, psychological status, length of stay, mortality, and patient/family
involvement); staff-related outcomes (clinical nurse specialist resources, nurse-physician collaboration, staff sense of accountability, staff competency) and economic outcomes (direct costs of service utilization).

How were decisions on the relevance of primary studies made?
Two investigators reviewed titles and abstracts of studies identified from the computerised searches. Nine graduate students reviewed all identified studies using a literature coding form and screened for data based studies. Inter-rater reliability was assessed by having two or more graduate students review approximately 10% of the studies. Reported inter-rater reliability was 100%. Study investigators screened all data based studies for process-outcome studies. The content of articles was analysed by the authors by summarising the following details of articles onto an article abstraction form: study objectives; sample details; findings; variables; reliability; validity; and the presence of a process-outcome link. At least three investigators reviewed the final set of studies using a predesigned abstraction form. Discrepancies were resolved by consensus.

Assessment of study quality
Validity was assessed on the following 12 quality criteria adapted from previous studies (see Other Publications of Related Interest no.1): process-outcome link clearly described; data collected prospectively; research questions and objectives described clearly and precisely; sample size justified; sample losses reported and accommodated; process measured; attempt made to adjust for severity of illness; sample selection random or of population of interest; reliability of instruments/methodology reported; statistics reported as sufficient to determine significance or relevance; and biases noted. At least three investigators reviewed the final set of studies using a predesigned abstraction form (which included quality criteria) with discrepancies resolved by consensus.

Data extraction
At least three investigators reviewed the final set of studies using a predesigned abstraction form with discrepancies resolved by consensus. Tables reported in the review included the following information: author and date of publication; content areas of process studied; time period (initial, subsequent, pre-discharge); type of assessment; assessment process and outcomes; study design; and sample size.

Methods of synthesis
How were the studies combined?
Nursing care processes were classified as nursing assessment, problem identification/nursing diagnosis, or problem management and combined in a narrative review.

How were differences between studies investigated?
Study results were discussed narratively and grouped according to nursing care process.

Results of the review
Seventeen studies were included, twelve with experimental or quasi-experimental design and five descriptive studies.

Only results from studies reporting significant links were presented.

Assessment process (5 studies, 2 with experimental design, 6 different types of assessment reported significant links, 14541 patients):

Significant links between process and outcome were reported for the following processes: readiness to learn and knowledge of medications with increased patient medication knowledge level; better nursing assessment of functional status, current symptoms, and vital signs with decreased 30-day mortality; improved discharge assessment with decreased length of stay; and use of assessment criteria and improved health knowledge.

No statistically significant effect was found for some outcomes for interventions reporting significant effects in other outcomes.
Problem identification process (1 study with non-experimental design, 150 patients, 1 problem identification process reported significant links).

Significant links between process and outcome were reported for the following processes: having nursing diagnosis and improved functional status at discharge; having at least one nursing diagnosis in the medical record and improved functional status at discharge; and identification of a mobility-related nursing diagnosis and an increase in the proportion of patients discharged to nursing homes.

Management process (5 studies, 3 with experimental design, 732 patients, 14 different problem management processes reported significant links).

Significant links between process and outcome were reported for the following processes: patient education and increased medication knowledge; a self-medication protocol and increased medication knowledge; the provision of non-physical care by nurses and improved physical condition; the provision of nurses and improved physical condition; discharge planning and a decreased length of stay; and clinical evaluation by nurses of patients' knowledge and improved patient health knowledge, physical care and improved psychological status.

Methodology.

The number of methodological criteria met varied from a low of 2 to a high of 11 (mean = 6). The most frequently met criteria were process-outcome link clearly described, data collected prospectively, and research questions and objectives described clearly and precisely. The least frequently met criteria were sample size justified, sample losses reported and accommodated, and statistics reported as sufficient to determine significance or relevance. Patient characteristics were rarely provided.

Authors’ conclusions

Although some nursing care processes affect health-related patient outcomes, the full extent of nursing-process outcome links is relatively understudied. Further evaluation of the interrelationships between nursing care processes and outcomes is critical.

CRD commentary

The aims were stated and inclusion criteria defined in terms of participants, intervention, and outcome. Eligible study design was not defined a priori. Several relevant potential sources of material were searched and attempts were made to locate unpublished material, although details of the search strategy were not reported. Comprehensive details were given of methods used to select studies and extract data. Validity was assessed using defined criteria, and the results of the assessment were reported. Some relevant information on the primary studies was presented in tabular format though details of results were only presented for studies which found significant links. Given the differences among studies, a narrative review was appropriate. However, only studies reporting significant links were included in the narrative review. Levels of significance, point estimates and CIs of differences in treatment arms were not reported making interpretation of results difficult and study quality was not taken into account when reporting the results. No mention was made of any account taken of multiple outcomes in reporting the significance of results. Without an assessment of validity and an examination of studies not showing significant links, it was not possible to assess the strength of evidence on which the conclusions were based.

Implications of the review for practice and research

Practice: The authors state that some nursing care processes affect patient outcomes.

Research: The authors state that research is required into the effects of nursing assessment on desired health-related patient outcomes; nursing problem identification; nursing management processes; and in diverse sites. The authors state that the methodological rigour of nursing care processes needs to improve, particularly in terms of method and sampling size, as well as with regard to the validity and reliability of instrumentation.
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Other publications of related interest

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.