

Electronic messaging-a contribution to fulfil the Coordination reforms intentions of coherent, seamless, coordinated and safe health services?

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Introduction

Patient information is exchanged between different levels of health care to provide new health level with adequate information in order to secure a seamless and continuous healthcare.

All municipalities are now able to communicate electronically by e-messages. Will this help nurses to produce, send and receive adequate and correct information in electronic messages – and thereby contributing to an adequate and safe patient care?

This projects objective is to assess the information quality of electronic messages and in particular if the information received meets the recipient's need of information to customize patient treatment and care.

Materials and Methods

The project made requests to one hospital coordination manager and 5 interaction coordinators in a region in Norway, who communicated the projects request for participants to the two sub-studies, to appropriate hospitals and municipalities. Some participants were recruited one by one by e-mail.

In sub-study 1, the Delphi study, 17 nurses and other experts from community health services and hospitals were recruited. The group also included other experts on the subject e-messages. In sub-study 2, the quantitative study, 10 hospital wards, including 22 nurses participated from one hospital in the region. 8 municipalities and 23 nurses and caseworkers from the community health services were recruited to participate.

The aim of the Delphi study was to define indicators related to the content quality of e-messages.

The results from sub-study 1 were qualitatively analyzed. The identified indicators were transformed into variables in two separate assessment scales, one for each chosen message ("admission report" sent from the municipality health care when the patient is admitted in hospital, "health information" sent from the hospital when the patient is ready to be discharged). The scales had 11/12 variables, and most of them could be answered on a scale from 1 (lowest) to 9 (highest). 2 variables had a yes/no choice, and the last variable provided an opportunity to comment.

In sub-study 2 nurses and caseworkers used the scales to assess the information quality in real life received messages.

Ethical considerations

The ethical committee at the faculty approved the study. The study was reported to the Norwegian Social Science Data Services (NSD).

Results

After four iterations in the Delphi study, the participants were presented to three tables with the final results concerning the indicators of quality. The participants gave a verification of the lists as they appeared. The results are shown in table 1.

Table 1- results Delphi-study, question 1 and 2.

| Question 1, Delphi. What do you think constitutes good quality in an e-message? Mention 5 key words. | SUM |
|--|-----|
| Updated medical information and diagnosis | 31 |
| Assessment of function, level of care and further help needed | 26 |
| Correct recipient | 23 |
| Precise and understandable language | 22 |
| To define a clear issue | 20 |
| Function descriptions | 19 |
| Planned treatment | 15 |
| Medical information | 16 |
| Sequence of events | 13 |
| Relevant information | 9 |
| Patient resources and goals | 7 |
| Question 2, Mention five key terms you think should be included in the free text area, Delphi, Admission Report. | SUM |
| Special conditions such as ulcers, diets, allergies | 9 |
| Current situation / cause of hospitalization | 8 |
| Medicine given today | 6 |
| Scheduled date of discharge | 6 |
| Rehabilitation potential | 5 |
| The patient's self-care skills / resources | 4 |
| Further follow-up appointments after discharge | 4 |
| Risk of falls, pain, nutrition status | 3 |
| Treatment / care, including drugs | 3 |
| Mobility / limitations | 3 |
| Inpatient examinations / results. | 1 |
| Need for facilitation / aids | 0 |
| Information on new prescriptions / new medicine supplied at discharge. | 0 |
| Question 2, Mention five key terms you think should be included in the free text area, Delphi, Health Information. | SUM |
| Planned discharge date | 21 |
| Further follow-up appointments after discharge | 20 |
| Inpatient examinations / results | 20 |
| Treatment / care, including drugs | 14 |
| Mobility / limitations | 13 |
| The patient's self-care skills / resources | 11 |
| Current situation / cause of hospitalization | 11 |
| Special conditions such as ulcers, diets, allergies | 10 |
| Rehabilitation potential | 9 |
| Risk of falls, pain, nutrition status | 7 |
| Medicine given today | 6 |
| Further follow-up appointments after discharge | 4 |
| Need for facilitation / aids | 5 |

An overview of the total number of sent and received messages in sub-study 2 is presented in table 2.

Table 2- the overall number of sent and received messages in the period

| | The overall number of sent messages | Assessed messages in the survey | Percentage (of total messages) assessed in the project | Number of participating hospital wards / Municipalities |
|--------------------|-------------------------------------|---------------------------------|--|---|
| Admission Report | 207 | 51 | 24,64 % | 10 hospital wards |
| Health Information | 609 | 132 | 21,67 % | 8 Municp. |

Admission Report:

Table 3 presents the nursing variables in the Admission Report, average score in ascending order.

Table 3, Admission Report

| Admission Report, Descriptive Statistics | | | | |
|--|--|----|------|-------------|
| | | N | Mean | Std. Devia- |
| Var. 5 | To what extent does the message contain information about nutrition / diet? | 46 | 3,37 | 2,855 |
| Var. 4 | To what extent does the message contain information about specific conditions such as sores and allergy / Cave? | 40 | 3,67 | 3,125 |
| Var. 6 | To what extent does the message contain information about the patient's mobility, possible risk of falls? | 49 | 5,16 | 3,118 |
| Var. 8 | Overall- to what extent is the message data of sufficient quality according to your need of information? | 49 | 5,80 | 2,614 |
| Var. 3 | To what extent does the message contain information about the patient self-care ability and resources? | 51 | 5,90 | 2,730 |
| Var. 1 | To what extent does the message have a clear problem / information about current situation? | 51 | 6,12 | 3,356 |
| Var. 2 | To what extent does the message contain information about the patient's level of functioning and need of assistance? | 51 | 6,16 | 2,788 |
| Var. 7 | To what extent does the message have a precise language? | 50 | 6,92 | 2,346 |
| | Valid N (list wise) | 35 | | |

Health Information:

Table 4 presents the nursing variables in the Health Information message, average score in ascending order.

Table 4, Health Information

| Health Information, Descriptive Statistics | | | | |
|--|---|-----|------|----------------|
| | | N | Mean | Std. Deviation |
| Var. 4 | The extent to which the message contains information on follow ups and appointments after discharge? | 125 | 4,62 | 3,167 |
| Var. 2 | The extent to which the message contains information about the treatment, including given medication during stay? | 129 | 5,52 | 2,670 |
| Var. 1 | The extent to which the message contains information about the patients level of functioning, further needs for assistance, if necessary- aids? | 130 | 6,28 | 2,559 |
| Var. 7 | Overall- to what extent is the message data of sufficient quality according to your need of information? | 132 | 6,52 | 2,435 |
| Var. 3 | To what extent has the message timely and adequate information on discharge date? | 127 | 7,09 | 2,918 |
| Var. 6 | To what extent does the message have a precise language? | 130 | 7,95 | 1,704 |
| Var. 5 | The extent to which the message contains information about admission cause / issue? | 131 | 8,15 | 1,756 |
| | Valid N (list wise) | 121 | | |

The respondents in sub-study 2 indicate that a high percentage of the assessed messages do contain faults and deviations, see table 5.

Table 5- messages containing faults or deviations, shown in %.

| Do you consider that the message contain fault or deviations? | Yes | No |
|---|---------|---------|
| Admission report | 47,10 % | 52,90 % |
| Health information | 45,00 % | 55,00 % |

Even with major deficiencies, 60-70 % of the participants indicate that deviations will not be reported.

Conducted factor analysis supports the assessment scales` reliability and validity, and indicates that the variables measure the same underlying phenomena.

Discussion

The quality of the information in "Admission Report" and "Health Information" is varying - and sometimes even has poor quality. The overall impression is that the information in e-messages to a certain extent may be incorrect, incomplete, and inconsistent or delayed, and that there is a clear potential for improvement. The information quality in e-messages must be improved to ensure the exchange of vital patient information. The overall impression also includes the fact that faults and deficiencies in e-messages must be reported- if not a vital area of learning to improve the content will be ignored. It may be questioned whether the channel (the message templates/standards) is good enough, or if the overall methodology is well enough established. It is certainly a fact that obtaining information from multiple channels is time-consuming and ineffective, and may even threaten patient safety. With this backdrop, it may be suggested that e-messages do not always work as intended.

There is a plethora of information nurses must consider before sending a message, and checklists/guidelines based on this projects indicators could probably be of help in improving information quality in e-messages.

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