

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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