

# Quality of collaboration and information handovers in palliative care: a survey study on the perspectives of nurses in the Southwest Region of the Netherlands

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**Background:** When patients receiving palliative care are transferred between care settings, adequate collaboration and information exchange between health care professionals is necessary to ensure continuity, efficiency and safety of care. Several studies identified deficits in communication and information exchange between care settings. Aim of this study was to get insight in the quality of collaboration and information exchange in palliative care from the perspectives of nurses. **Methods:** We performed a cross-sectional regional survey study among nurses working in different care settings. Nurses were approached via professional networks and media. Respondents were asked questions about collaboration in palliative care in general and about their last deceased patient. Potential associations between quality scores for collaboration and information handovers and characteristics of respondents or patients were tested with Pearson's chi-square test. **Results:** A total of 933 nurses filled in the questionnaire. Nurses working in nursing homes were least positive about inter-organizational collaboration. Forty-six per cent of all nurses had actively searched for such collaboration in the last year. For their last deceased patient, 10% of all nurses had not received the information handover in time, 33% missed information they needed. An adequate information handover was positively associated with timeliness and completeness of the information and the patient being well-informed, not with procedural characteristics. **Conclusion:** Nurses report that collaboration between care settings and information exchange in palliative care is suboptimal. This study suggests that health care organizations should give more attention to shared professionalization towards inter-organizational collaboration among nurses in order to facilitate high-quality palliative care.

## Introduction

In the last months of life, the majority of patients is at least once transferred between different care settings.<sup>1</sup> Most transfers in the last 3 months of life involve an admission to or discharge from a hospital.<sup>1,2</sup> Adequate transfers of patients between care settings in palliative care are associated with lower rates of symptom crises and unplanned hospitalizations, decreased numbers of hospital deaths and supportive needs being better met.<sup>3,4</sup> Adequate transfers are thus crucial for patient experiences of care in the last phase of life.<sup>4</sup>

Adequate transfers require adequate inter-organizational collaboration, to ensure continuity, efficiency and safety of care.<sup>5–8</sup> Inter-organizational collaboration has been defined as ‘a cooperative, inter-organizational relationship that is negotiated in an ongoing communicative process, and which relies on neither market nor hierarchical mechanisms of control’.<sup>9</sup> Auschra emphasizes that each inter-organizational collaboration underlies a dynamic, context-dependent and history-laden process.<sup>9</sup>

During the last decade it has been increasingly recognized that the quality of collaboration between primary care and hospital care is often not optimal.<sup>10</sup> Several studies have been done on collaboration between the hospital setting and other health care providers,<sup>5,11–13</sup> especially in the field of chronic disease care.<sup>6,10</sup> Patients and family caregivers have been found to need and expect multidisciplinary and inter-organizational collaboration, but too

often feel that health care professionals lack a collaborative attitude.<sup>4,14</sup>

Following Kodner and Spreeuwenberg,<sup>15</sup> Auschra categorized barriers to the integration of care in inter-organizational settings in five relevant domains, ranging from the macro to the micro level: the administrative domain, the funding domain, the (inter)organizational domain, the service delivery domain and the clinical domain.<sup>9</sup> The micro level as defined by Auschra involves the clinical domain, including aspects such as common professional languages; agreed understandings, practices and standards for specific diseases; and ongoing communication with patients. It also involves the service delivery domain, which is affected by factors such as staff training, interpersonal relationships between professionals, and the distribution of responsibilities and tasks. Auschra suggested several barriers to the integration of care at the micro level, among which differences in professionalization, lack of trust, and lack of communication and information exchange.<sup>9</sup>

An important practical aspect of collaboration is the handover of information upon the transfer of patient from one care setting to another.<sup>16</sup> Inadequate handovers involve the risk of miscommunication, misunderstanding and the omission of critical information.<sup>5–7,16,17</sup> Research on information exchange has mostly focused on shift-to-shift handovers of nurses working on the same ward.<sup>17–21</sup> Other studies have identified deficits in information exchange between hospital and community care providers.<sup>16,22</sup> Information flows have been found to be inadequate and the

content of written and verbal transfer information to be incomplete. Palliative care is often provided by different care organizations, and thus requires adequate information transfer to ensure that patients' needs are met. den Herder-van der Eerden et al.<sup>4</sup> examined integrated palliative care initiatives in five European countries and found that informational continuity seemed to be relatively poor in all initiatives.

Nurses play a key role in inter-organizational collaboration and information exchange in palliative care, but little is known about their experiences. Therefore, we studied the following research questions:

- i. What are the experiences of nurses working in different care settings with inter-organizational collaboration in palliative care?
- ii. What are the experiences of nurses working in different care settings with information handovers between care settings in palliative care?

## Methods

### Study design

This cross-sectional survey study was part of a larger study on continuity in palliative care in the Southwest Region of the Netherlands. The study was performed among nurses working in all care settings where palliative care is provided: care homes or nursing homes, home care, hospices, hospitals or other settings.

### Study population

The study population consisted of nurses in the Southwest Region of the Netherlands working in different care settings that regularly provide palliative care. Nurses were approached via several professional networks for palliative care, professional newsletters and social media, in the period May to December 2017. We aimed for participation of a broad range of nurses. Inclusion criteria were that the respondent was practicing as a nurse with education level, according to International Standard Classification of Education (ISCED) ranging from levels 3 to 6, and regularly provided palliative care. Nurses were invited to fill in a digital version of the questionnaire or they could ask the researchers for a paper copy.

### Questionnaire

A new questionnaire was developed for this study by the research group, because available instruments did not meet our goals. We used relevant literature<sup>23,24</sup> and previously used questionnaires to formulate questions.<sup>25,26</sup> The first part of the questionnaire included questions on the respondents' work setting, age, gender, education level, working experience, being trained in palliative care and degree of urbanization of work setting.<sup>27</sup> The questionnaire further focused on (i) nurses' general experiences with collaboration in palliative care and (ii) their experiences with handing over information in the case of the last deceased patient they had cared for.

The part of the questionnaire on collaboration contained one question about how important inter-organizational collaboration is for the nurse, which could be answered on a four-point scale ranging from 'very important' to 'not important at all'. The survey contained general questions about nurses' collaboration with care providers from other care settings, which could be answered on a four-point scale ranging from 'always' to 'never'. Further, questions were asked about the last deceased patient nurses had cared for, socio-demographic and disease characteristics of this patient, whether the patient came from another setting, whether the nurse had received any information about the patient, and, if yes, how and what had been the impact. Statements about this information handover could be answered on a five-point scale ranging from 'totally agree' to 'not agree at all'. Our results entail the answers to questions

about inter-organizational collaboration and information handovers between care settings.

We used two numerical scales (range 0–10) to assess the general quality of collaboration and the quality of the information handover for the last deceased patient, respectively, with a higher score representing a higher perceived quality. A full draft of the questionnaire was tested for face validity and readability among 10 nurses in different settings. Their comments were incorporated in the final version of the questionnaire.

### Statistical analyses

Scores for quality of collaboration and handover of information were categorized into 'inadequate' (scores  $\leq 5$ ) and 'adequate' (scores  $\geq 6$ ). Potential associations of these dichotomized quality scores with characteristics of the respondents or patients were tested for statistical significance with the Pearson's chi-square test. The association between scores for quality of collaboration and quality of information handovers was analyzed using the Pearson correlation coefficient. All tests were two-tailed with a significance level of 0.05. Data were analyzed using the statistical programme SPSS version 24.

## Results

### Nurses characteristics

Nine hundred and thirty three nurses filled in the questionnaire. Nurses' work settings were categorized in five main groups. Of all respondents, 39% were working in home care, 18% in a hospice, 14% in a care home or nursing home, 13% in a hospital and 16% in another or in more than one setting. Sixty-eight per cent were highly educated. Most of the nurses (84%) had more than 5 years licenced nursing experience. Seventy-five per cent had received some form of training in palliative care. Fifty-four per cent worked in a strongly urbanized area, 17% in a moderately urbanized area and 24% in a rural area (table 1).

### Inter-organizational collaboration

Out of 933 respondents, 781 answered questions about their collaboration with other care professionals during the last year. Most nurses were rather positive: 77% indicated that in their experience professionals had 'always' or 'often' collaborated as one team in order to provide patients and their relatives with adequate care. Eighty-three per cent indicated that adequate collaboration between professionals had 'always' or 'often' improved the quality of care (table 2).

Furthermore, 46% of the nurses 'always' or 'often' actively searched themselves for collaboration with professionals from outside their own organization. Eighteen per cent regularly participated in meetings with care providers from outside their own organization. The percentage of hospice nurses participating in such meetings was highest (27%) and the percentage was lowest among care home or nursing home nurses (7%) (table 2).

Nurses' mean quality score for collaboration with care providers from outside their own organization was 6.8 (SD 1.5). Nurses in care homes or nursing homes had the lowest mean score (6.0) and home care nurses had the highest mean score (7.1). Thirteen per cent of the nurses judged the quality of collaboration to be inadequate (score  $\leq 5$ ), and 86% judged it to be adequate (score  $\geq 6$ ; table 2). We found a significant difference in the appreciation of the quality of collaboration between nurses working in different care settings ( $\chi^2$ ,  $P < 0.001$ ). Nurses who regularly participate in meetings to discuss individual patient care with care providers from outside their own organization, rated the quality of collaboration more often as adequate ( $\chi^2$ ,  $P < 0.001$ ) than nurses who did not participate in such meetings. Further, nurses who indicated that there is a standard procedure or form to inform other care settings if a patient is transferred, more often rated the quality of collaboration as adequate ( $\chi^2$ ,

**Table 1** Characteristics of nurses by care setting

		Total <sup>a</sup>	Nurse worked in:			
			Care home/ nursing home <sup>b</sup>	Home care	Hospice	Hospital
		<i>N</i> = 933 <i>n</i> (%)	<i>N</i> = 130 <i>n</i> (%)	<i>N</i> = 364 <i>n</i> (%)	<i>N</i> = 164 <i>n</i> (%)	<i>N</i> = 122 <i>n</i> (%)
Age (mean, SD)		45.8 (11.8)	44.9 (11.4)	46.5 (11.4)	47.6 (11.2)	39.7 (12.4)
Gender	Female	881 (94)	121 (93)	352 (97)	156 (95)	111 (91)
	Male	52 (6)	9 (7)	12 (3)	8 (5)	11 (9)
Education level <sup>c</sup>	Higher education level <sup>d</sup>	636 (68)	53 (41)	226 (62)	129 (79)	120 (98)
	Intermediate education level	295 (32)	77 (59)	136 (37)	35 (21)	2 (2)
Number of years licenced as nurse	0–2 years	79 (8)	10 (8)	31 (9)	11 (7)	16 (13)
	3–4 years	67 (7)	14 (11)	27 (7)	9 (6)	9 (7)
	5–10 years	126 (14)	17 (13)	54 (15)	10 (6)	28 (23)
	More than 10 years	661 (71)	89 (69)	252 (69)	134 (82)	69 (57)
Trained in palliative care <sup>e</sup>	Yes	696 (75)	95 (73)	248 (68)	157 (96)	77 (63)
	No	237 (25)	35 (27)	116 (32)	7 (4)	45 (37)
Degree of urbanization of work setting <sup>f</sup>	Extremely/strongly urbanized <sup>g</sup>	503 (54)	68 (52)	182 (50)	90 (55)	79 (65)
	Moderately urbanized	158 (17)	26 (20)	75 (21)	20 (12)	13 (11)
	Hardly/not urbanized	225 (24)	32 (25)	100 (28)	46 (28)	9 (7)

a: In this total, also a group of 153 nurses that worked in another/more than one setting is included.

b: Residential care homes and nursing homes in the Netherlands are facilities for vulnerable old and other persons, where medical care is provided by on-site (nursing home) or off-site physicians, mostly general practitioners).<sup>41</sup>

c: Missings: *n* = 2 (0%).

d: ISCED, International Standard Classification of Education: higher education level refers to higher professional (nurse) education (ISCED levels 4–6). Intermediate professional (nurse) education refers to upper secondary (nurse) education [ISCED level 3]].<sup>42</sup>

e: Trained in palliative care: 'Yes' refers to any self-reported additional education in palliative care after degree (training in palliative care organized by own organization, basic training in palliative care organized by regional network palliative care, postgraduate continuing professional education).

f: Missings: *n* = 47 (5%).

g: Degree of urbanization is based on zip code of work setting, related to environmental address density [extremely urbanized (address density of 2500 or more addresses/km<sup>2</sup>); strongly urbanized (1500–2500 addresses/km<sup>2</sup>); moderately urbanized (1000–1500 addresses/km<sup>2</sup>); hardly urbanized (500–1000 addresses/km<sup>2</sup>); not urbanized (<500 addresses/km<sup>2</sup>).<sup>28,43</sup>

*P* < 0.01) than nurses who did not have such a standard procedure or form. We found no significant association between nurses' quality scores for collaboration and their age, gender, education level, numbers of years licenced as nurse, being trained in palliative care or degree of urbanization of work setting.

### Transfer of information

In total, 506 out of 933 nurses (54%) indicated that they had received at least one handover of information upon the transfer of the last deceased patient they had cared for (table 3). Most patients for whom an information handover was received were 80 years or younger (74%) and had a diagnosis of cancer (76%) (table 3). Communication was partly or not possible with 29% and 13% of these patients, respectively. Symptom burden was relatively high: 56% of these patients suffered moderately or severely from three or more symptoms (table 3).

In total, 448 out of 506 nurses (89%) answered questions about the last handover they had received for this patient: 69% had received it from a hospital setting, 25% from a home care setting and 6% from another care setting (table 4). Nurses mean score for the quality of the last information handover was 7.0 (SD 1.4). Eighty-nine per cent judged the quality as adequate (score ≥ 6) and 11% judged it as inadequate (score ≤ 5; table 4). Twelve per cent of the nurses who had received an information handover from a hospital assessed the quality as inadequate compared with 7% of the nurses who had received an information handover from a home setting and 12% of the nurses who had received an information handover from another setting. Ninety per cent of the nurses (totally) agreed that the information had been available in time. Sixty-seven per cent of the nurses (totally) agreed that the information handover contained all the information

they needed and 76% agreed that the patient was well-informed about his or her disease and prospects (table 4). Information was mostly handed over on a standard paper form (52%) or digital form (27%). Seventeen per cent of the nurses had received a 'warm handover of information' (with personal contact). Fourteen per cent of the nurses had received a specific palliative care handover, either on paper or digitally (table 4). Seventy-five per cent of the nurses agreed that information had been quickly available and transferable in unforeseen situations. Fifty-seven per cent of the nurses reported that the information handover had positively affected the quality of care, 5% of the nurses reported that the information handover had negatively affected the quality of care (table 4).

We found that the quality of the handover of information was more often rated as adequate for patients with whom less communication was possible ( $\chi^2$ , *P* = 0.02). Out of 402 nurses who (totally) agreed that the information handover was timely available, 92% scored the quality of the information handover as adequate compared with 70% of those who did not agree ( $\chi^2$ , *P* < 0.001). An adequate score for the quality of the information handover was also positively associated with the information having been complete ( $\chi^2$ , *P* < 0.001), the patient being well-informed about their disease and prospects ( $\chi^2$ , *P* < 0.001), and all information being quickly available in unforeseen situations ( $\chi^2$ , *P* < 0.001). We also found a positive association between the score for the quality of information handover and the score for the quality of collaboration (*r* = 0.13, *P* < 0.01, *n* = 409). We found no significant association between nurses' quality scores for information handover and patients' age, disease or symptom burden; the way of information handover, the care setting where the receiving nurse worked, the degree of urbanization of work setting or consultation of health care professionals outside her own organization.

**Table 2** Experiences of nurses with inter-organizational collaboration<sup>a</sup>

		Total <sup>b</sup> N = 781 n (%)	Nurse worked in:			
			Care home/ nursing home N = 97 n (%)	Home care N = 310 n (%)	Hospice N = 144 n (%)	Hospital N = 96 n (%)
How important is collaboration with care providers from outside your own organization for you? <sup>c</sup>	Very/reasonably important <sup>d</sup>	719 (92)	72 (74)	299 (96)	134 (93)	89 (93)
How would you rate the quality of collaboration with care providers outside your own organization? <sup>e</sup>	Mean (SD) <sup>e</sup>	6.8 (1.5)	6.0 (2.2)	7.1 (1.2)	6.8 (1.3)	6.7 (1.4)
	Inadequate ( $\leq 5$ )	104 (13)	30 (31)	26 (8)	18 (13)	15 (16)
	Adequate ( $\geq 6$ )	668 (86)	66 (68)	279 (90)	125 (87)	81 (84)
How often did it occur during the last year . . . . . that all care providers worked together as one team to provide a patient and his/her relatives with adequate care	Always/often <sup>f</sup>	604 (77)	84 (87)	230 (74)	114 (79)	75 (78)
. . . that the quality of care for a patient improved due to adequate collaboration between care providers.	Always/often <sup>f</sup>	649 (83)	74 (76)	264 (85)	127 (88)	71 (74)
. . . that the quality of care for a patient deteriorated due to inadequate collaboration between care providers	Always/often <sup>f</sup>	97 (12)	9 (9)	39 (13)	20 (14)	8 (8)
. . . that you searched for collaboration with care providers outside your own organization.	Always/often <sup>f</sup>	359 (46)	21 (22)	184 (59)	54 (38)	34 (35)
. . . that you trusted that all care providers who were involved in caring for a patient delivered good care.	Always/often <sup>f</sup>	642 (82)	81 (84)	257 (83)	124 (86)	75 (78)
Do you regularly participate in meetings to discuss individual patient care with care providers from outside your own organization? <sup>c</sup>	Yes	143 (18)	7 (7)	56 (18)	39 (27)	11 (11)
Is there a standard procedure/form to inform other care settings if a patient is transferred? <sup>c</sup>	Yes	544 (70)	64 (66)	210 (68)	102 (71)	89 (93)

a: Number of nurses that answered general questions about inter-organizational collaboration, i.e. collaboration in a broader sense than information transfer:  $n = 781$ .

b: In this Total, also a group of 134 nurses that worked in another/more than one setting is included.

c: Missings: did not exceed 1.3%.

d: Nurses could answer on a four-point scale: 'very important'/'reasonably important'/'a little bit important'/'not important'. Very important/reasonably important answers were combined in this table.

e: Nurses were asked to give a score on a scale from 1 to 10, with a higher score representing better quality.

f: Nurses could answer on a four-point scale: 'always'/'often'/'sometimes'/'never'. Always/often answers were combined in this table.

## Discussion

### Professionalization towards collaboration in palliative care

In our study, the large majority of nurses indicated that collaboration with care providers from other care organizations is important to them, but they were modestly positive about the quality of such collaboration, with 13% rating it as inadequate. Somewhat less than half of the nurses indicated to regularly search for inter-organizational collaboration and a minority participates in inter-organizational meetings to discuss patient care. Overall, about one in five nurses feel that the quality of care may suffer from poor collaboration.

Poor collaboration between health care professionals from different settings and professions has been associated with differences in professionalization between health care professionals. Professionalization is described as a process that serves to secure and protect exclusive areas of knowledge, skills and expertise of professionals in the health care system.<sup>28</sup> Auschra has suggested that different professions may have divergent cultural assumptions and professional values, and may follow different procedures.<sup>9</sup> Such variance can cause conflicts within inter-organizational collaborations.<sup>9,28,29</sup> In a systematic review of research on views from patients, carers and health care professionals on the provision of palliative care for non-cancer patients by primary care providers, Oishi and Murtagh<sup>30</sup> found that the role of different health care providers was perceived as unclear and that there was lack of

collaboration between professionals. Alvarado and Liebig<sup>31</sup> found that in community-based palliative care disturbances in collaboration between family doctors and nurses are mainly caused by different professional values regarding palliative care and dying.

In our study, nurses working in care homes or nursing homes were least positive about inter-organizational collaboration. Most care homes or nursing home nurses (almost) never searched for collaboration with care providers outside their own organization. Several studies have assessed nursing home care providers' professional views regarding palliative and terminal care. In a focus group study in a municipal nursing home in Germany, Bükki et al.<sup>32</sup> found that interprofessional collaboration in end-of-life care was perceived as problematic by all professions due to understaffing, ethical conflicts and lack of training. In a large survey study among long term care providers in Canada, Leclerc et al.<sup>33</sup> found that one in four respondents felt not comfortable sharing experienced difficulties in palliative care with colleagues. Following the literature on inter-organizational collaboration,<sup>34</sup> we assume that for nurses in care homes or nursing homes inter-organizational collaboration is even more complex than interprofessional collaboration within their own organization, although we do not know the reasons from the care home or nursing home nurses in our study for their moderately low rating of quality of collaboration with care providers from other settings.

As for home care nurses, their score for the quality of collaboration was the highest and their attitude towards collaboration was most positive. They most often perceive collaboration with care providers outside their own organization as important and most

**Table 3** Characteristics of the last deceased patient for whom the nurse had received one or more information handovers, by care setting where the patient came from<sup>a</sup>

		Total N = 506 n (%)	Patient came from:		
			Hospital N = 322 n (%)	Home N = 128 n (%)	Other care setting <sup>b</sup> N = 56 n (%)
Care setting where nurse who received handover worked	Care home/nursing home	65 (13)	31 (10)	15 (12)	19 (34)
	Home care	202 (40)	142 (44)	47 (37)	13 (23)
	Hospice	103 (20)	63 (20)	29 (23)	11 (20)
	Hospital	39 (8)	24 (8)	11 (9)	4 (7)
	Other/more than one setting	97 (19)	62 (19)	26 (20)	9 (16)
Information handover received for this patient? <sup>c</sup>	Yes, once	404 (80)	259 (80)	107 (84)	38 (68)
	Yes, more than once	102 (20)	63 (20)	21 (16)	18 (32)
Patient characteristics					
Gender	Female	281 (56)	176 (55)	74 (58)	31 (55)
	Male	225 (44)	146 (45)	54 (42)	25 (45)
Age	Younger than 40	20 (4)	9 (3)	2 (2)	9 (16)
	40-60 years	116 (23)	86 (27)	26 (20)	4 (7)
	60-80 jaar years	238 (47)	159 (49)	60 (47)	19 (34)
	Older than 80	132 (26)	68 (21)	40 (31)	24 (43)
Diagnosis (multiple options possible)	Cancer	382 (76)	256 (80)	99 (77)	27 (48)
	Heart disease	59 (12)	30 (9)	20 (16)	9 (16)
	Asthma/COPD	46 (9)	29 (9)	10 (8)	7 (13)
	Diabetes	31 (6)	20 (6)	5 (4)	6 (11)
	Dementia	43 (9)	14 (4)	14 (11)	15 (27)
	Other	197 (39)	120 (37)	48 (38)	29 (52)
Phase in which nurse took care of patient (multiple options possible)	Two/three months before patient died	220 (44)	151 (47)	45 (35)	24 (43)
	Last month before patient died	224 (44)	147 (46)	55 (43)	22 (39)
	Last week before patient died	221 (44)	130 (40)	60 (47)	31 (55)
	In dying phase	87 (17)	52 (16)	20 (16)	15 (27)
	Bereavement care	90 (18)	56 (17)	20 (16)	14 (25)
	Other <sup>d</sup>	34 (7)	19 (6)	5 (4)	10 (18)
Communication	Possible	295 (58)	213 (66)	67 (52)	15 (27)
	Partly possible	144 (29)	83 (26)	37 (29)	24 (43)
	Not possible	67 (13)	26 (8)	24 (19)	17 (30)
Presence of symptoms <sup>e</sup>					
Pain	Rather/very <sup>f</sup>	304 (60)	203 (63)	73 (57)	28 (50)
Dyspnoea	Rather/very <sup>f</sup>	167 (33)	106 (33)	40 (31)	21 (38)
Fatigue	Rather/very <sup>f</sup>	445 (88)	289 (90)	113 (88)	43 (77)
Fear	Rather/very <sup>f</sup>	193 (38)	120 (37)	49 (38)	24 (43)
Depressive feelings	Rather/very <sup>f</sup>	137 (27)	90 (28)	31 (24)	16 (29)
Number of symptoms	0 or 1 symptom	75 (15)	41 (13)	24 (19)	10 (18)
	2 symptoms	150 (30)	95 (30)	38 (30)	17 (30)
	3 symptoms	146 (29)	96 (30)	35 (27)	15 (27)
	≥4 symptoms	135 (27)	90 (28)	31 (24)	14 (25)

a: Number of last deceased patients they cared for, for whom a nurse received one or more information handovers:  $n = 506$  (100%).

b: Information handover came from another setting than hospital or home (i.e. care/nursing home, hospice or other care setting).

c: Respondents were asked if they had received an information handover for the last deceased patient they had cared for. It was explained to them that it could be an information handover once or more than once, and that it was supposed to be an information handover from another organization and not an information handover in the context of 'end of shift handovers'. In total, 506 nurses answered yes to this question and answered questions about this patient.

d: In total, 26 out of 34 nurses indicated under the answer 'Other' that they cared for this patient longer than 3 months some of them up till years.

e: Respondents were asked what symptoms in their last deceased patient were present in the phase that they cared for this patient.

f: Nurses could answer on a five-point scale: 'not at all'/'a little bit'/'do not know'/'rather'/'very'. Rather/very answers were combined in this table.

often actively search for this collaboration. Our results support findings from other studies that collaboration with other care providers is an important aspect of the professionalization of home care nurses, and especially of those who provide palliative care.<sup>35,36</sup>

Only 38% of nurses working in inpatients hospice settings actively searched for inter-organizational collaboration, which may demonstrate that they feel that such collaboration is less necessary while hospice is the final care setting for almost all admitted patients.

We found that although many hospital nurses are often confronted with admission or discharge of patients with a limited life expectancy,<sup>1</sup> only 35% of them actively searched for collaboration with care providers outside their own hospital in the last year. Professional attitudes towards collaboration in palliative care with

care providers from other care settings seem to differ between nurses from different care settings.

### Information handovers

Nurses were moderately positive about the quality of information handovers, with handovers from home care settings scoring better than handovers from hospitals. We found few specific palliative care handovers. In accordance with other studies, timeliness and completeness of the information were strongly associated with positive evaluations of handovers.<sup>4,6,12,22,37-39</sup> The way of information handover was not associated with the appreciation of handovers. Our finding that handovers from hospital were more often standard digital or paper handovers and less often 'warm' handovers than

**Table 4** Experiences of nurses with the exchange of information upon the transfer of the last deceased patient they had cared for<sup>a</sup>

		Total N = 448 n (%)	Patient was transferred from:		
			Hospital N = 310 n (%)	Home N = 112 n (%)	Other care setting N = 26 n (%)
How would you rate the quality of this information handover? <sup>b</sup>	Mean (SD, range)	7.0 (1.4, 1–10)	6.9 (1.4, 1–10)	7.3 (1.5, 1–10)	7.2 (1.3, 4–9)
	Inadequate ( $\leq 5$ )	48 (11)	37 (12)	8 (7)	3 (12)
	Adequate ( $\geq 6$ )	400 (89)	273 (88)	104 (93)	23 (88)
The information was available at the moment I started caring for the patient.	(Totally) agree <sup>c</sup>	402 (90)	275 (89)	103 (92)	24 (92)
The information handover contained all the information I needed.	(Totally) agree <sup>c</sup>	298 (67)	197 (64)	83 (74)	18 (69)
Way of information handover (multiple options possible)	Standard digital handover	120 (27)	95 (31)	16 (14)	9 (35)
	Standard paper handover	232 (52)	176 (57)	42 (37)	14 (54)
	Specific digital palliative care handover	22 (5)	14 (5)	8 (7)	0 (0)
	Specific paper palliative care handover	40 (9)	30 (10)	9 (8)	1 (4)
	'Warm' handover with personal contact	76 (17)	34 (11)	32 (29)	10 (39)
	Handover through email	31 (7)	14 (5)	14 (13)	3 (12)
	Unknown	19 (4)	15 (5)	4 (4)	0 (0)
The patient was well-informed about his or her disease and perspectives.	(Totally) agree <sup>c</sup>	342 (76)	226 (73)	97 (87)	19 (73)
Information was quickly available and transferable in unforeseen situations.	(Totally) agree <sup>c</sup>	335 (75)	223 (72)	90 (80)	22 (85)
Did the information exchange affect the quality of care for this patient? <sup>d</sup>	Yes, in a positive sense	255 (57)	172 (56)	72 (64)	11 (42)
	Yes, in a negative sense	23 (5)	20 (7)	2 (2)	1 (4)
	No	152 (34)	104 (34)	36 (32)	12 (46)
	Other	17 (4)	13 (4)	2 (2)	2 (8)
For the patient and family it was clear who was available to help them with questions or problems.	(Totally) agree <sup>c</sup>	386 (86)	256 (83)	106 (95)	24 (92)
For me it was clear who was available to help me with questions about care for the patient or family.	(Totally) agree <sup>c</sup>	409 (91)	276 (89)	108 (96)	25 (96)

a: Number of nurses that received one or more information handovers for the last deceased patient they cared for, and that answered questions about this (last) received information handover:  $n = 448$  (100%).

b: Nurses were asked to give a score on a scale from 1 to 10, with a higher score representing better quality.

c: Nurses could answer on a five-point scale 'totally agree'/'agree'/'neutral'/'not agree'/'not agree at all'. Totally agree/agree answers were combined in this table.

d: Missings:  $n = 1$ .

handovers from home care is thus no explanation for the different appreciation of handovers. Other studies have found the opposite: no verbal information from home care nurses when patients are admitted to the hospital, while there is often a telephone call combined with written information upon patients' discharge from hospital.<sup>22,38</sup> However, whereas usually several nurses take alternately care of one patient, it can be questioned to what extent a 'warm' handover contributes to adequate information transfer, because verbal information is reliant on memory and details of the information may be omitted or forgotten.<sup>22</sup>

The appreciation of information handovers was positively associated with patients being well-informed about their disease and perspectives. One explanation for this could be that extensive information handover is less needed for patients who are well-informed and capable of giving information and expressing their care needs themselves. It may also be that in case the patient is well-informed, patient's care needs upon the transfer are more often congruent with patients' and nurses' expectations. Other studies also found that for high-quality palliative care patients must be involved by informing them about their disease and perspectives.<sup>40</sup> Several authors suggest that a comprehensive discharge procedure with extra information in case of complex patients may improve information transfer.<sup>12,16,39</sup> We did not find an association between use of specific palliative care forms and nurses' appreciation of handovers. However, whereas den Herder-van der Eerden et al.<sup>4</sup> found that patients and relatives felt burdened when they had to take care of information handovers

themselves, such comprehensive and specific palliative care handovers may nevertheless be important for the wellbeing of patients and relatives.

Our study provides insight in the experiences with inter-organizational collaboration and information handovers of a large number of nurses working in various settings. A limitation is that nurses were openly invited to participate via several networks and media. Therefore we could not calculate a response rate and there is a possibility that selection bias occurred because respondents may have had more affinity or experience with palliative care than non-respondents. This could mean that nurses who have more affinity with palliative care were more critical and therefore rated the quality of inter-organizational collaboration and information transfer lower than non-respondents. We expect our findings to be generalizable to other parts of the Netherlands and Europe although we are not sure about the international generalizability because of differences in health care systems and education of care providers. Finally, the cross-sectional nature of our study limits the possibility to make robust causal inferences.

In conclusion, our findings show that on the micro-level professional boundaries between nurses from different care settings seem to hinder inter-organizational collaboration in palliative care. Further, our findings suggest that more shared professionalization towards inter-organizational collaboration in palliative care between nurses from different care settings

may facilitate adequate collaboration and high-quality palliative care. In health care organizations more attention should be paid to this shared professionalization between nurses working in different care settings. Efforts to improve inter-organizational collaboration between nurses that regularly provide palliative care should take into account the complexity of inter-organizational collaboration.

## Supplementary data

Supplementary data are available at *EURPUB* online.

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*Conflicts of interest:* None declared.

## Key points

- We found a significant difference in the appreciation of the quality of inter-organizational collaboration in palliative care between nurses working in different care settings.
- We found differences in professionalization towards inter-organizational collaboration in palliative care between nurses from different care settings, which may be a barrier to inter-organizational collaboration.
- Nurses report that the quality of information handovers in palliative care upon the transfer of patients from one care setting to another is suboptimal.
- Adequate information handover was positively associated with timeliness and completeness of the information and the patient being well-informed about their disease and perspectives, not with procedural characteristics.
- Health care organizations should give more attention to shared professionalization towards inter-organizational collaboration among nurses working in different care settings in order to facilitate high-quality palliative care.

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References 41–43 are provided in the Supplementary data.

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## Caesarean delivery and the use of antidepressants

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**Background:** The high ratio of caesarean sections (C-sections) is a major public health issue in the developed world; but its implications on maternal mental health are not well understood. **Methods:** We use individual-level administrative panel data from Hungary between 2010 and 2016 to analyze the relationship between caesarean delivery and antidepressant consumption, an objective indicator of mental health. We focus on low-risk deliveries of mothers without subsequent birth in 3 years, and include around 135 000 observations. **Results:** After controlling for medical and socio-economic variables, antidepressant use before delivery is associated with an elevated risk of C-section (adjusted OR = 1.10, 95% CI 1.05–1.14) and C-section is associated with a higher probability of antidepressant use within 1–3 years after delivery (e.g. adjusted OR = 1.21, 95% CI 1.12–1.30, within 3 years after delivery, among mothers without pre-delivery antidepressant consumption). Our data restriction ensures that the results are not driven by a mechanical impact of decreasing fertility on the continuation of antidepressant use after a C-section. **Conclusions:** The results suggest that C-section is associated with worse mental health over the 1- to 3-year horizon after birth. This relationship is particularly important if a caesarean delivery is not necessary due to medical reasons, and physicians as well as expectant mothers should be made aware of the potential mental health implications of the mode of delivery.

### Introduction

We analyze the relationship between delivery by caesarean section (C-section) among low-risk pregnancies and maternal mental health, where the latter is measured by the consumption of antidepressants. C-section rates are steadily increasing worldwide,<sup>1</sup> and Hungary has a much higher C-section rate than e.g. the OECD average (37.2% vs. 28% in 2015<sup>2</sup>). These high and increasing rates constitute a public health concern because, according to the World Health Organization, ‘C-sections are effective in saving maternal and infant lives, but only when they are required for medically indicated reasons’.<sup>3</sup>

The negative effects of C-sections on infant and maternal health are not well understood. In this article, we focus on maternal mental health, which includes depressive and anxiety disorders. These mental health problems can partly originate from postpartum depression, which has an estimated prevalence of 10–20%.<sup>4–8</sup>

We use an objective indicator of mental health problems, the consumption of antidepressants, which is increasing throughout the developed world. In the OECD, the per capita consumption of antidepressants has more than doubled between 2000 and 2015, and

Hungary experienced a similarly huge increase, although per capita consumption is only around half of the OECD average.<sup>2</sup> Thus, in this article, we analyze the linkage between two phenomena of major health policy interest: caesarean delivery and antidepressant use.

The existing literature on the mental health effects of the mode of delivery is contradictory. A recent systematic literature review<sup>9</sup> summarizing mainly observational studies concludes that C-section increases the risk of postpartum depression, whereas an earlier meta-analysis<sup>10</sup> did not find such a link. Also, a recent paper, using instrumental variable techniques, estimates that caesarean delivery substantially increases the probability of post-traumatic distress and depression.<sup>11</sup> We contribute to this strand of the literature by using an objective indicator of depression (antidepressant use), and by looking at the detailed time pattern of antidepressant use at a long period, up to 3 years before and 3 years after delivery.

C-section and maternal mental health after delivery might be linked through various channels. According to the biopsychosocial model, mental health is shaped by biological, psychological, social and cultural factors.<sup>12</sup> Since these factors are linked to the mode of delivery,<sup>13,14</sup> they contribute to an observed relationship between