

Article

Do integrated care structures foster processes of integration? A quasi-experimental study in frail elderly care from the professional perspective

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Abstract

Objective: This study explores the processes of integration that are assumed to underlie integrated care delivery.

Design: A quasi-experimental design with a control group was used; a new instrument was developed to measure integration from the professional perspective.

Setting and participants: Professionals from primary care practices and home-care organizations delivering care to the frail elderly in the Walcheren region of the Netherlands.

Intervention: An integrated care intervention specifically targeting frail elderly patients was implemented.

Main Outcome Measures: Structural, cultural, social and strategic integration and satisfaction with integration.

Results: The intervention significantly improved structural, cultural and social integration, agreement on goals, interests, power and resources and satisfaction with integration.

Conclusions: This study confirms that integrated care structures foster processes of integration among professionals.

Trial registration: Current Controlled Trials ISRCTN05748494.

Key words: integration processes, professional perspective, satisfaction, integrated care, frail elderly patients

Introduction

Health systems worldwide are increasingly implementing integrated care as a strategy to deliver high-quality care to the growing number of elderly people. Integrated care is defined as ‘a coherent set of methods and models on the funding, and the administrative, organizational, service delivery and clinical levels designed to create connectivity, alignment and collaboration within and between the cure and care sectors’ [1]. Policy imperatives and reforms have been directed towards achieving more synergy within health systems, whereas local programmes and interventions have been implemented to coordinate clinical care for targeted populations in the community [2–4]. Frail elderly

populations in particular are believed to benefit from integrated care, as their complex and continuously changing health and social problems render them in need of a wide range of services over a long period of time [5]. Integrated care interventions targeting frail elderly patients generally involve a multi-disciplinary team (led by a general practitioner), case management, patient care plans, shared ICT, multi-disciplinary protocols and the delegation and specialization of tasks, often in conjunction with financial (e.g. integrated funding) and organizational arrangements (e.g. partnerships/network organization) [6, 7]. Whilst empirical evidence suggests that such combinations of (multi-level) components improve accessibility, quality and outcomes

of care, there is considerable uncertainty as to how these improvements are achieved [6–9]. It is assumed that integrative structures foster processes of integration in the entire organization of care delivery, and that these processes are the prerequisite of effective integrated patient care [10, 11]. However, whether and to what extent integration occurs in the actual delivery of care remains unclear [3, 12].

Early integration efforts involved the redesign of organizational structures, centralized governance and top-down implementation strategies, but mostly failed to demonstrate better outcomes [13–15]. Research suggested that structural changes alone are insufficient for integrating services and patient care, prompting scholars to recognize the complex and nonlinear nature of the integration process [3]. For instance, professionals may fail to adopt integrative structures (e.g. shared protocols, meetings and ICT) into existing practice routines or may fail to establish the social and cultural bonds needed to collaborate effectively across professional boundaries. If so, the clinical care itself is likely to remain unchanged, even when organizational and administrative integration is achieved [16, 17]. The emphasis in the scientific discourse on integration subsequently shifted to operational activities (e.g. teamwork, knowledge exchange and communication) and cognitive, cultural and power differences between professional groups [16, 18].

Despite the apparent importance of professionals in the success of integration efforts, there is a paucity of research on integrated care from their perspective [19, 20]. As a result, the processes of integration that are assumed to occur among professionals have thus far remained a ‘black box’ [7, 12]. Integration efforts are often costly, laborious and prone to failure. To identify the most effective integration strategies, insight into this black box is needed. As professionals have operational knowledge and insight into work processes, their perspective is one of the most reliable indicators of integration [11, 17, 21].

Study aim

This study aimed to measure integration processes in the delivery of integrated care as perceived by professionals. In addition, satisfaction with integration was measured as this is rarely taken into account in evaluations of integrated care [10]. An intervention specifically targeting frail elderly patients was implemented in the Walcheren region of the Netherlands in 2010. The following research question was used: what is the impact of an integrated care intervention for frail elderly patients on the professionals’ perception of and satisfaction with processes of integration?

Intervention

A local cooperative of primary care practices (PCPs) initiated, developed and implemented the Walcheren Integrated Care Model (WICM). The WICM took a multi-level approach to achieve integration at the funding, administrative, organizational, service delivery and clinical level (Fig. 1). Integrated funding involved an experimental ‘financial module’ provided by the regional healthcare insurer to reimburse intervention-related costs to participating PCPs. Organizational and administrative integration was achieved through the creation of a geriatric care network, consisting of the PCP cooperative a hospital, a nursing home, the three largest home-care organizations, a mental health organization, allied health practices and elderly patient-, informal care and volunteer associations. Home-care organizations were important network partners, as they provide various services in the elderly patients’ homes through small community-based teams consisting of a community nurse, general and specialized nurses and domestic helpers. Services range from around-the-clock supervision and/or specialized nursing care, home recovery/rehabilitation, home meal services, personal care and domestic assistance. Network partners, governmental social care/welfare organizations and the

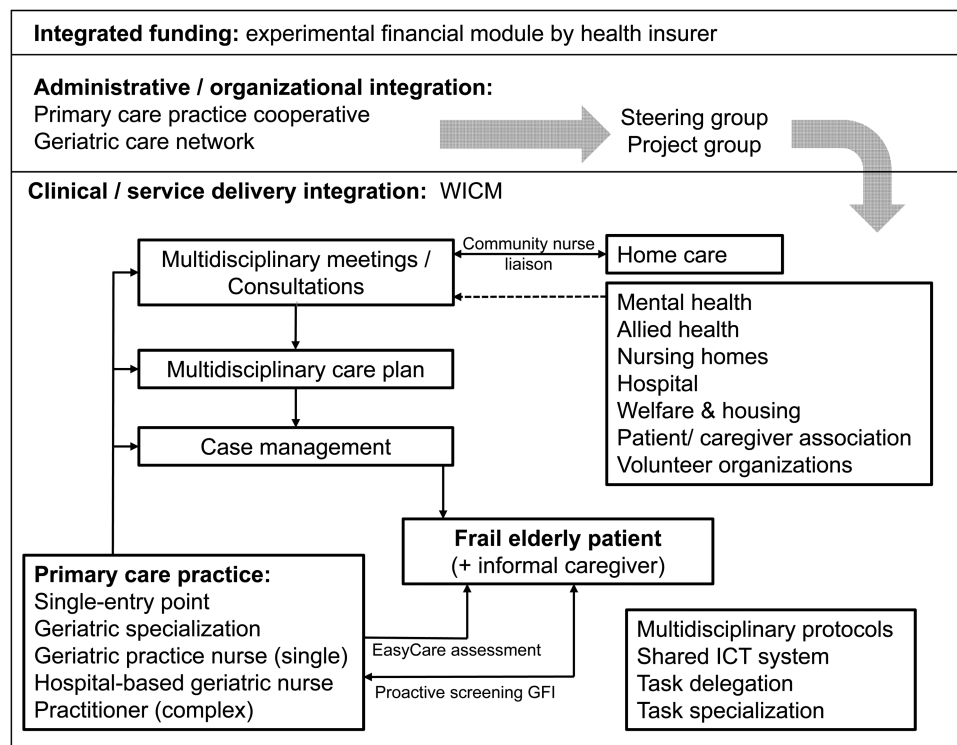


Figure 1 The Walcheren Integrated Care Model.

municipalities formed a 'steering group' that was responsible for the further development and planning of the WICM. A 'project group' of professionals was responsible for the development of multi-disciplinary protocols.

To achieve integration at the service delivery and clinical level, PCPs served as a 'single-entry point' for patients, informal caregivers and professionals. Practices introduced 'preventive screening, case management, task delegation' and 'task specialization'. Specifically, the GP proactively screened all elderly patients (75+) for frailty using an 'evidence-based screening tool' (Groningen Frailty indicator) [22]. Tasks related to the coordination and planning of care, patient monitoring and managing medical records were delegated from the GP to case managers. Specialization involved the differentiation between a 'single-disease' case manager (a practice nurse) and a 'complex care' case manager (a hospital geriatric nurse-specialist). In addition to receiving specialty geriatric training, GPs and case managers had access to specialist knowledge of a hospital geriatrician that was available for consultations. After screening, frail elderly patients were assigned to a case manager who then performed a 'comprehensive assessment of needs' using a second evidence-based instrument (EASYcare) [23]. The case manager transformed the assessment results into an 'individualized care plan' that was then discussed in a 'multi-disciplinary group meeting'. These meetings were led by the GP and attended by the case manager, a community nurse and other relevant professionals, such as a hospital geriatrician, nursing home doctor, geriatric physiotherapist, social worker or psychologist. The community nurse represented the home-care organizations and acted as liaison by relaying the wishes, observations and suggestions of home-care nurses and domestic helpers to the WICM team. This arrangement aimed to better utilize the unique information and signaling function of home-care personnel, owing to their close proximity to patients and informal caregivers. After approval of the care plan by the team, tasks were assigned to the appropriate team member based on 'multi-disciplinary care protocols'. Subsequently, each professional could access the care plan through a 'shared information and communication system'. The care plan was periodically evaluated in a meeting, the frequency of which ranged from once a month to once a year, depending on the patient's condition.

Theory

Conceptual framework

In Donabedian's model of quality assessment, structures refer to the presence of the elements and resources needed to deliver care in a particular setting, processes denote the use of these structures in the actual delivery of care and outcomes are the consequences of processes [10]. Integrated care structures, processes and outcomes have often been conceptualized in a similar manner, starting with the placement of integrative structures that promote processes of integration, which eventually produce the desired outcomes [11, 19]. This generic framework has proved useful in previous evaluations of integration [10–15] and was therefore adopted in this study.

Processes of integration

Integration is typically considered to be a multi-dimensional concept that consists of structural, social, cultural and strategic processes [24]. 'Structural integration' refers to the availability and functioning of mechanisms that promote inter-professional collaboration, coordination of tasks, functions and activities, and frequent, adequate and timely communication [25, 26]. Positive social relationships are developed

as professionals gain mutual understanding, trust, respect and appreciation, and become aware of each other's tasks [27]. These processes of 'social integration' further promote collaboration as professionals increasingly accept and use each other's working methods and approaches [25]. 'Cultural integration' occurs when professionals develop shared norms and values, resulting in a shared culture [24, 25]. Developing a shared strategy is central to integration at the administrative and organizational levels and can therefore be referred to as 'strategic integration'. A shared strategy describes the organizational structures and processes that further shape, govern and manage joint activities [28]. Developing a shared strategy in pursuit of integration requires 'domain consensus', which refers to the alignment of the goals and interests of stakeholders and reaching agreement on the distribution of power and resources. Insufficient domain consensus among professionals hinders the development of a shared strategy and, thus, of the entire integration process [25, 28].

Methods

Study design and participants

The medical ethics committee of the Erasmus Medical Centre Rotterdam reviewed and approved the study protocol (No. MEC-2013-058). This study involved a quasi-experimental design with a control group. The experimental group consisted of professionals providing care to the frail elderly in the areas surrounding the three PCPs (six GPs) working with the WICM located in eastern Walcheren. The control group consisted of professionals providing usual care to the frail elderly in the areas surrounding the five control PCPs (five GPs) located in northern, southern and western Walcheren. Usual care for frail elderly patients in the Netherlands can be described as reactive and mono-disciplinary. Patients generally consult their GP on their own initiative and can only access care and curative services through the referral of their GP. Participants were professionals from the eight participating PCPs (GPs, practice nurses, practice assistants and case managers) and the three largest home-care organizations (registered nurses and domestic helpers).

Questionnaire development

Operationalizations and design

The few measures of integration that are currently available are limited to structural and cultural aspects of integration [19, 20]. The exceptions focus either on general aspects of integration at the system level [13] or one aspect of integration in a specific professional group [16]. A new questionnaire was therefore developed. On the basis of work of Fabbriotti [25], Gittel [26] and existing measures of integration [11, 14, 15], key indicators of structural, cultural, social and strategic processes of integration were selected and operationalized (Additional File 1). Items were phrased to capture the professionals' perceptions of integration processes on a five-point Likert scale from 1 (not at all) to 5 (completely). Items relating to satisfaction were based on the key indicators, of which a selection was made to maintain the questionnaire's feasibility. Satisfaction items involved a seven-point Likert scale from 1 (extremely dissatisfied) to 7 (extremely satisfied), following a widely used measure in healthcare [29]. Items were included to account for age, gender, number of hours work per week, current position and number of years working in the current position. An additional item was included to determine the location (s) at which respondents were (most) active as professionals, through which they could be allocated to the control or experimental group. The questionnaire was designed according to the 'post-then-pre'

principle, i.e. post- and baseline-measurements were performed simultaneously [30].

A panel of five professionals (one GP, three registered nurses and one domestic helper) assessed the face validity and clarity of the questionnaire. On the basis of their feedback, a number of items were simplified and a case description of a frail elderly patient was included (Additional File 2). The aim of this case was to determine whether respondents were actually involved in the care to frail elderly patients; respondents were asked to indicate whether they regularly encountered similar patients in their work; if not, they did not have to fill out the questionnaire. The panel approved the revised questionnaire for distribution.

Data collection

The questionnaires were distributed after all eligible elderly patients were included in the WICM, i.e. 18 months after implementation. In accordance with the post-then-pre principle, 'the current situation' equaled the post-measurement and 'the situation 18 months ago' equaled the baseline-measurement. Home-care organizations distributed the questionnaires internally to protect the privacy of their employees, and PCPs were sent questionnaires by mail. Supra-regionally operating care providers such as hospitals, nursing homes and allied health practices could not be allocated to the control or experimental group and were therefore excluded from the study.

Analysis

Scale construction

All items satisfied our criterion of a maximum of 10% missing values, and therefore, none were excluded from further analysis. Negatively phrased items were reversed. Primary component analysis (PCA) with oblimin rotation was used to evaluate and extract the factors of each dimension based on baseline scores. For dimensions consisting of more than one factor, new scales were created. Items that could not be included in a scale were analyzed separately. Factor structure, fit and significance was assessed using Eigenvalues (>1), scree plots, the Kaiser–Meyer–Olkin measure (>0.7) and Bartlett's test of Sphericity ($P < 0.05$). Factor loadings of >0.4 and Cronbach's α of >0.70 (internal consistency) were considered sufficient.

Analysis of scales

The study population was described using means, standard deviations and percentages. The mean scale scores were calculated, after which linear regression analyses were performed to assess the effect of the intervention on these scores. Each analysis involved three regression

models: Model 1 contained the scale's T0 scores (i.e. baseline 18 months prior), Model 2 added the control variables and Model 3 added the intervention. Control variables were age, gender, hours per week, years in the current position and 'employed by a PCP'. The latter was a transformation of the 'current position' variable into a dichotomous variable (yes/no) to better capture the central role of primary care in the intervention. It was expected that this central role would translate into primary care respondents perceiving higher degrees of integration than home-care respondents. All models and effects were considered significant at $P < 0.1$.

Results

Response and study population

A total of 626 questionnaires were sent, of which 196 were returned. A total of 16 respondents were excluded because they were not involved in care delivery to frail elderly patients ($n = 10$) or because they could not be allocated to a group ($n = 6$). Hence, the definitive study population consisted of 180 respondents, which constitutes a response rate of 29% (Table 1). The majority of the study population was female; most respondents were domestic helpers (performing household and/or personal care tasks) employed by a home-care organization. The age of respondents was around 44 years; they had worked ~ 9 years in their current position and worked 21 h per week on average. The experimental and control group were equal in age, years in current position and hours per week, but differed significantly in terms of gender ($P = 0.071$) and the distribution of primary care practice professionals, i.e. GPs and nurses ($P = 0.001$).

Principal component analysis

The Kaiser–Meyer–Olkin of all scales ranged from 0.75 to 0.93, verifying the sampling adequacy of the analysis (Table 2). Bartlett's test showed that the correlations between the items in each scale were sufficiently large for principal component analysis ($P < 0.001$). All Eigenvalues were >1 , ranging from 2.446 to 6.929. The total variance explained by the items in each scale ranged from 61 to 74%. Scales could be constructed for social and cultural integration and for satisfaction with integration. The items 'appropriateness of care' and 'timeliness of care' could not be included in the structural integration scale. Furthermore, the strategic integration dimension yielded two distinct scales that were labeled 'agreement' and 'hindering' of (differences in) goals, power and interests. All scales met the internal consistency criterion of >0.70 , with most scales reaching values above 0.8.

Table 1 Response and study population

Questionnaires sent ($N = 626$)	Response ^a $N = 180$ (29%)	Type of professional	Control ($N = 120$)	Experimental ($N = 60$)
Primary care practices ($N = 48$)*	$N = 28$ (58%)	GP	3	7
		CM/practice nurse	3	5
		Practice assistant	5	5
Home-care organizations ($N = 578$)	$N = 152$ (26%)	Domestic helper	85	36
		Registered nurse	24	7
Control variables		Male [#]	3%	10%
		Age	44.6 (SD 12.7)	43.7 (SD 11.6)
		Years	9.1 (SD 8.3)	8.4 (SD 7.6)
		Hours per week	20.8 (SD 9.6)	22.3 (SD 11.5)

GP, general practitioner; CM, case manager; SD, standard deviation.

^aResponse after exclusion.

[#] $P < 0.1$, ** $P < 0.01$.

Table 2 Factor loadings, PCA statistics and Cronbach's α of scales

Scales of integration						
Items	Structural integration	Social integration	Cultural integration	Strategic integration: agreement	Strategic integration: hindering	Satisfaction with integration
Professionals coordinate their activities (who does what)	0.877					
Professionals keep each other informed regarding changes	0.875					
Appropriateness of patient-related communication	0.820					
Professionals coordinate their visits (who visits when)	0.818					
Professionals collaborate adequately in case problems arise	0.815					
Timeliness of patient-related communication	0.800					
Accuracy of patient-related communication	0.798					
Professionals evaluate their care provision jointly	0.784					
Frequency of patient-related communication	0.779					
Professionals involved in the patient's care understand each other		0.902				
Professionals involved in the patient's care trust each other		0.890				
Professionals involved in the patient's care appreciate each other		0.874				
Professionals involved in the patient's care respect each other		0.873				
Professionals are aware of each other's tasks and expertise		0.753				
Professionals accept each other's methods of care provision			0.862			
Professionals approach the patient in similar ways			0.849			
Agreement amongst professionals regarding how care is provided			0.825			
Professionals have similar values and standards in care provision			0.817			
Professionals have similar goals in care provision				0.822		
Professionals agree with the distribution of resources				0.787		
Professionals have similar interests in care provision				0.785		
Professionals agree with the distribution of power				0.732		
Differences in distribution of power hinder integration					0.895	
Differences in interests hinder integration					0.868	
Differences in goals hinder integration					0.822	
Differences in distribution of resources hinder integration					0.810	
Satisfaction with the distribution of resources						0.872

Table continued

Table 2 Continued

Scales of integration						
Items	Structural integration	Social integration	Cultural integration	Strategic integration: agreement	Strategic integration: hindering	Satisfaction with integration
Satisfaction with methods of care provision						0.837
Satisfaction with interaction between professionals						0.825
Satisfaction with the distribution of power						0.799
Satisfaction with shared goals						0.793
Satisfaction with coordination of the content of care						0.791
Satisfaction with the type of care that is provided						0.779
Satisfaction with care to the frail elderly in general						0.778
Satisfaction with how the patient is approached						0.756
Satisfaction with timeliness of information						0.746
Satisfaction with accuracy of information						0.744
KMO	0.927	0.875	0.819	0.752	0.816	0.929
Bartlett's test χ^2	1043.75***	582.535***	297.677***	187.204***	326.354***	1314.063***
Eigenvalue	6.038	3.698	2.810	2.446	2.888	6.929
% Variance	67.1	74.0	70.3	61.1	72.2	63.0
α T0	0.94	0.91	0.86	0.79	0.87	0.94
α T1	0.93	0.89	0.81	0.71	0.86	0.92

*** $P < 0.001$.**Table 3** Mean scores (*M*) and standard deviations (SD) for T0 and T1

	Experimental group		Control group	
	T0	T1	T0	T1
Scales (range)	<i>M</i> (SD)	<i>M</i> (SD)	<i>M</i> (SD)	<i>M</i> (SD)
Structural integration (1–5)	3.5 (0.81)	3.7 (0.71)	3.5 (0.70)	3.5 (0.70)
Social integration (1–5)	3.9 (0.66)	4.1 (0.49)	3.8 (0.64)	3.9 (0.62)
Cultural integration (1–5)	3.7 (0.59)	3.9 (0.47)	3.5 (0.66)	3.6 (0.57)
Strategic integration: agreement (1–5)	3.7 (0.54)	3.8 (0.42)	3.5 (0.56)	3.6 (0.50)
Strategic integration: hindering (1–5)	3.0 (0.89)	3.1 (0.89)	3.1 (0.81)	3.1 (0.80)
Satisfaction with integration (1–7)	5.1 (0.91)	5.5 (0.62)	4.9 (0.94)	5.0 (0.86)
Item: appropriateness of care (1–5)	4.0 (0.80)	4.1 (0.59)	3.9 (0.72)	3.9 (0.68)
Item: timeliness of care (1–5)	3.8 (0.73)	3.9 (0.58)	3.6 (0.76)	3.7 (0.65)

Mean scores and regression analyses

The mean scores ranged from 3.0 to 4.1 (1–5) on the integration scales and items and from 4.9 to 5.5 (1–7) on the satisfaction scale (Table 3). All scores increased between T0 and T1 in the experimental group, whereas several scores remained unchanged in the control group. Subsequent regression analyses indicated that the intervention significantly improved integration on all scales except 'hindering' (Table 4). Specifically, the intervention significantly improved structural integration ($P = 0.005$), social integration ($P = 0.074$), cultural integration ($P = 0.031$), the agreement on goals, interests, power and resources ($P = 0.059$), the satisfaction with integration ($P = 0.000$) and the appropriateness ($P = 0.040$) and timeliness of care ($P = 0.019$). Baseline scores were significant predictors for all scales and items ($P = 0.000$),

'working hours' was a significant predictor of structural and social integration, agreement, and satisfaction with integration ($P = 0.042$; 0.089; 0.086; 0.011, respectively) 'being employed by a PCP' was a significant predictor of structural integration ($P = 0.033$) and timeliness of care ($P = 0.017$). Finally, gender was the only significant predictor for 'hindering' ($P = 0.041$).

Discussion

This study explored the processes of integration that are assumed to underlie integrated care delivery. The results showed significant improvements in structural, cultural and social integration, agreement on goals, interests, power and resources and satisfaction with integration after implementation of an integrated care intervention targeting

Table 4 Regression analyses: models, adjusted R^2 , coefficients (β) and significance (P)

Scale	Model	Adj. R^2 (%)	Baseline	Gender	Age	Hours	Years	PCP	WICM
Structural integration	1	68.9	0.831***	–	–	–	–	–	–
	2	72.4	0.861***	–0.031	0.008	0.087[#]	–0.076	0.135**	–
	3	73.6	0.853***	–0.016	0.015	0.102*	–0.070	0.100*	0.119**
Social integration	1	54.9	0.743***	–	–	–	–	–	–
	2	57.0	0.745***	–0.018	–0.087	0.096	0.012	0.087	–
	3	57.6	0.735***	–0.006	–0.083	0.107[#]	0.017	0.058	0.095[#]
Cultural integration	1	54.0	0.737***	–	–	–	–	–	–
	2	56.1	0.767***	–0.048	–0.014	0.087	–0.083	0.086	–
	3	57.1	0.744***	–0.030	–0.007	0.102	–0.077	0.049	0.116*
Strategic integration: agreement	1	57.8	0.762***	–	–	–	–	–	–
	2	59.0	0.790***	–0.049	–0.001	0.097	–0.064	0.046	–
	3	59.6	0.773***	–0.036	0.006	0.106[#]	–0.060	0.015	0.099[#]
Strategic integration: hindering	1	73.5	0.858***	–	–	–	–	–	–
	2	74.0	0.856***	–0.102*	–0.021	–0.028	–0.058	0.028	–
	3	74.0	0.857***	–0.098*	–0.018	–0.024	–0.057	0.018	0.036
Satisfaction integration	1	48.5	0.699***	–	–	–	–	–	–
	2	53.6	0.708***	–0.069	–0.012	0.136*	–0.095	0.106[#]	–
	3	57.3	0.679***	–0.040	–0.009	0.160*	–0.080	0.049	0.206***
Appropriateness of care	1	64.4	0.804***	–	–	–	–	–	–
	2	65.6	0.822***	–0.051	–0.032	0.019	–0.071	0.092[#]	–
	3	66.2	0.809***	–0.038	–0.029	0.029	–0.066	0.065	0.097*
Timeliness of care	1	67.1	0.821***	–	–	–	–	–	–
	2	70.3	0.879***	–0.037	0.023	0.070	–0.068	0.151**	–
	3	71.1	0.862***	–0.027	0.025	0.079	–0.063	0.119*	0.104*

Bold values indicate significant P values.

Adj. R^2 , adjusted explained variance; PCP, employed by primary care practice; WICM, intervention.

[#] $P < 0.10$, * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

frail elderly patients. This study thus confirms the widely held assumption that integrated care structures foster processes of integration among professionals [10–20].

It has been argued that integration merely indicates an organizational improvement that does not necessarily result in integrated patient care [17]. As well, the integration process has often been described as a complex and time-consuming undertaking that takes years to translate into actual changes in care delivery [11, 18, 21]. However, this study demonstrates that such changes can be achieved within a relatively short time span of 18 months. It also shows that local integrated care interventions such as the WICM provide a fertile ground for a fundamental change in the process of care delivery. It is increasingly recognized that system and organization redesign in itself is insufficient or even unnecessary for achieving integrated care delivery, and that more focused interventions and micro-level approaches may be more appropriate [17]. Moreover, local integration efforts targeting specific patient groups may contribute to system-wide integration for all patients in the long run [2–4]. In this study, the ‘integrators’ (i.e. PCP professionals) constituted a small minority in a study population that was dominated by home-care professionals. The entire population nonetheless experienced improvements in integration, suggesting that, integrated working at intervention-practices affected other areas of care delivery as well, including community- and home-care. Alternatively, the intervention may have allowed home-care personnel to interact more frequently with case managers, providing them with better access to advice, support and equipment, and the opportunity to contribute to more effective care plans. If so, this study contradicts the popular belief that successful integration requires the active involvement of all professionals [17, 18, 21].

Our instrument proved a reliable measure of integration from the professional perspective, consisting of empirically and theoretically

consistent scales. This instrument may be particularly useful in conjunction with other measures of integration. There is a growing consensus in the literature that multi-perspective evaluation frameworks that include system, organization, professional and patient inputs are needed to demonstrate the added value of integrated care [3, 19, 20]. The current instrument may contribute to the development and refinement of such frameworks.

The main limitation of this study is the relatively low response. A possible explanation is that only a certain subset of professionals was involved in the care for the frail elderly, resulting in the non-response of the majority. Another limitation is the lack of a process evaluation, as a result of which each intervention components’ contribution to integration remains uncertain [2]. Finally, a pre-then-post design may evoke socially desirable responses. Although this does not outweigh its advantages, such as the minimal time investment for respondents, guaranteed anonymity and the reduced risk of response shift bias [30]. Future research is recommended to further test and validate the instrument developed for this study, preferably in conjunction with a process evaluation. More research is also needed to determine the impact of local interventions on system-wide integration, the role of (indirect) professional involvement and the explicit inclusion of home-care in the implementation of integrated care. In conclusion, this study demonstrates that integrated care structures foster integration within the relatively short time span of 18 months, and without the active involvement of all professionals. These results, and the instrument that was developed, may contribute to the ongoing efforts to demonstrate the added value of integrated care.

Supplementary material

Supplementary material is available at *INTQHC Journal* online.

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