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Research and Theory

Professionals' views on interprofessional stroke team functioning

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Abstract

Introduction: The quality of integrated stroke care depends on smooth team functioning but professionals may not always work well together. Professionals' perspectives on the factors that influence stroke team functioning remain largely unexamined. Understanding their experiences is critical to identifying measures to improve team functioning. The aim of this study was to identify the factors that contributed to the success of interprofessional stroke teams as perceived by team members.

Methods: We distributed questionnaires to professionals within 34 integrated stroke care teams at various health care facilities in 9 Dutch regions. 558 respondents (response rate: 39%) completed the questionnaire. To account for the hierarchical structure of the study design we fitted a hierarchical random-effects model. The hierarchical structure comprised 558 stroke team members (level 1) nested in 34 teams (level 2).

Results: Analyses showed that personal development, social well-being, interprofessional education, communication, and role understanding significantly contributed to stroke team functioning. Team-level constructs affecting interprofessional stroke team functioning were communication and role understanding. No significant relationships were found with individual-level personal autonomy and team-level cohesion.

Discussion and conclusion: Our findings suggest that interventions to improve team members' social well-being, communication, and role understanding will improve teams' performance. To further advance interprofessional team functioning, healthcare organizations should pay attention to developing professionals' interpersonal skills and interprofessional education.

Keywords

multidisciplinary teams, interprofessional, stroke team, team functioning, integrated stroke care, multilevel analysis

Introduction

Integrated care pathways involving complex inter-professional interventions are increasingly used in stroke care, among other settings [1, 2]. Randomized controlled trials and systematic reviews have demonstrated that integrated stroke services reduce the rates of eventual disability and institutionalization [3] and

increase the number of desirable interventions compared with generally-managed patients [4].

Although integrated stroke services produce widely varying outcomes [5], the underlying mechanisms remain poorly understood. We do know that inter-professional teamwork is considered the core component of integrated care [6], a complex activity involving many different health care providers that demands

effective team functioning. Much effort has been made to improve interprofessional team collaboration [7]; optimal collaboration and coordination are essential. Ideally, each team member knows the diverse points of view held by all other team professionals and trusts other team members to deliver care that is appropriate to their respective disciplines. Critical elements of care are carried out completely by combining each team member's capacities and capabilities [8]. Team members are involved in collective information-seeking to address specific problems and may use each other as information sources [9, 10]. Effective teams have been related to better patient responsiveness [11], more efficient use of resources [12, 13], and increases in health gains.

Unfortunately, professionals do not always work well together, a situation that can negatively affect the quality of patient care and services [7]. Involvement of various professionals in stroke care does not guarantee coordinated teamwork [14]. One problem is that interprofessional team members have to simultaneously manage the teamwork process and their individual identities [15]. Research has demonstrated that good communication [15–17], clear role understanding [18–21], and high levels of social well-being [21, 22] improve work processes and patient safety because integrated care requires interventions designed to integrate discrete areas of expertise. Effective integrated care requires that each team member possesses the knowledge required for optimal patient care [8]. The diverse capacities, capabilities and know-how of professionals working in an interprofessional stroke team are combined into a total treatment plan for stroke patients. Each professional is consulted when appropriate to determine the expected clinical course of a specific problem and make decisions about care, which requires that each professional clearly understand her own role as well as the roles of other stroke team members. Training, interprofessional education, and personal development may improve collaboration among professional team members [23, 24]. Personal autonomy has also been recognized as important to team and individual functioning [25, 26].

Shared team-level constructs are attributes that stem from individual members' perceptions but are shared by the team. Such properties may refer to commonly held experiences, attitudes, values, norms, cognitions, or behaviors. Well-known examples of team-level constructs are cohesion, role understanding, and communication [27]. The more individual members perceive themselves as part of a team instead of a single entity, the more cohesive the team [28, 29], the stronger the team bond, and the more willing members are to show cooperative behavior [30].

Although the success of integrated stroke services relies heavily on interprofessional team functioning, professionals' perspectives on the factors influencing such functioning remain largely unexamined. Our aim is to examine subjectively professionals' views on the factors that lead to the success of interprofessional stroke teams and identify mechanisms to improve teamwork. On the *individual* level we investigated personal autonomy, personal development, communication, role understanding, social well-being, and interprofessional education. On the *team* level, we investigated the shared constructs of cohesion, communication, and role understanding.

Methods

Participants and sampling

We used a purposive sample. With the help of stroke unit coordinators and after obtaining informed consent, we distributed questionnaires to professionals within 34 stroke teams at 12 hospitals, 16 nursing homes, and 6 rehabilitation centers in 9 Dutch regions: Goes, Maastricht, Arnhem, Sittard, Land van Cuijk, Almere, Amsterdam, Tiel, and Rotterdam. Ethical approval was not necessary; the board of directors of each organization agreed to participate in the study. The sites were part of a benchmark study on integrated stroke care in the Netherlands. Because they varied in size and collaboration with academic hospitals, the stroke centers were considered representative of the range of available integrated stroke services in the Netherlands [31]. A total of 558 professionals (response rate: 39%) nested in 34 teams completed the questionnaire.

Questionnaire

The scope of the questionnaire was to assess professionals' opinions on interprofessional stroke team functioning. Measurements were based on existing instruments: (i) the Social Production Function scale (SPL-IL scale) [32], (ii) a questionnaire on interprofessional team functioning [33], and (iii) a work satisfaction questionnaire [34]. We elicited only questions from the instruments that were related to interprofessional team functioning. They were unmodified and used verbatim. We performed no additional validity testing prior to survey distribution. Our final instrument consisted of closed-ended questions with a supplied set of response options. Demographic data solicited included gender, educational level, and occupation. Items (Appendix A) measured (i) interprofessional stroke team functioning, (ii) personal autonomy, (iii) personal development, (iv) communication and role understanding, and (v) social well-being (figure 1). Respondents rated their level of

agreement on a 4-point scale. We recoded negative items into positive; higher scores indicated a higher level of agreement.

Individual-level variables

Because the aim of our study was to assess professionals' views on interprofessional stroke team functioning, we used subjective instead of objective measures (e.g. process indicators or patient outcomes) of stroke team functioning. *Interprofessional stroke team functioning* was assessed with 10 items based on Cott [33] examining communication, planning, support, and decision-making processes (Cronbach's $\alpha=0.81$). We assessed *personal autonomy* with three items [34]: (i) "I know the goals and demands of my work," (ii) "I can organize my own work," and (iii) "I can work independently" (Cronbach's $\alpha=0.69$); and *personal development* with a six-item work satisfaction questionnaire [29] that examined competence, training, and skill development in the workplace (Cronbach's $\alpha=0.62$). We assessed *communication and role understanding* with eight items designed by Cott [33] that investigated team members' satisfaction with intra-team communication and cooperation (Cronbach's $\alpha=0.80$). We assessed *social well-being* with six items concerning (i) respondents' perceived contribution to quality of care and patient well-being and (ii) their value as team members (Cronbach's $\alpha=0.69$) [32, 34]. *Interprofessional education* was assessed by asking respondents how many days in the past year they spent on training or education with other members of the stroke team. We dichotomized this item into those who had had interprofessional education (1) and those who had not (0).

Shared team-level constructs

Cohesion, communication and role understanding are well-known examples of shared team-level characteristics that affect team functioning [27, 30]. The mean team characteristics constructed were (i) communication and role understanding and (ii) cohesion ("I really feel like I belong to the stroke team"). Both team characteristics were aggregated from individual level variables.

Analysis

Our data analysis sought to examine the impact of individual- and team-level indicators on interprofessional stroke team functioning. Descriptive statistics are reported as mean values and standard deviations (SDs). To account for the hierarchical structure of the study design we fitted a hierarchical random-effects

model. Deviance tests or likelihood ratio tests were used to compare the relative fit of the different model. The difference in deviance of two nested models has a χ^2 distribution with degrees of freedom equal to the number of extra parameters in the larger model. The hierarchical structure comprises 558 interprofessional stroke team members (level 1) nested in 34 teams (level 2). Individuals were excluded if any outcome observation was missing, leading to a total of 494 individuals in the multilevel regression analysis. The indicators of interprofessional stroke team functioning were estimated with a two-level random-intercepts and fixed-slopes model structure. Statistical Package for the Social Sciences (SPSS) software (version 17.0; SPSS Inc., Chicago, IL, USA) was used for all statistical analyses.

We report our results in the sequence of analysis. To estimate the relative contributions of independent variables, we calculated the reduction in model deviance from the null (intercept only) to models containing the intercept and each individual variable. To estimate the strength of associations we obtained explained variance at both individual and team levels. First we described the estimates of the empty model (1), which reflect variation in the intercept. Second, we estimated the adjusted coefficients of the different independent variables (model 2).

Results

Respondents, who were mostly female (80%), worked in hospitals (44%), rehabilitation centers (39%), or nursing homes (17%) as nurses (44%), physical therapists (12%), physicians (10%), occupational therapists (9%), speech therapists (6%), or other team members, such as social workers, dieticians, and managers (19%) (Table 1). The mean score for interprofessional stroke team functioning was 26.65 ± 3.8 (range: 10–40); respondents considered their team functioning above average. More than half the respondents had received interprofessional education during the past year. Team-level variables used in the multilevel regression analysis are shown in Table 2.

Table 3 shows the multilevel indicators of all examined factors of interprofessional stroke team functioning according to the professionals' perspectives. In their experience, personal development ($p \leq 0.001$), communication and role understanding ($p \leq 0.001$), social well-being ($p \leq 0.001$) and interprofessional education ($p \leq 0.001$) affected interprofessional stroke team functioning at the individual level. We also found that the *team-level* construct of communication and role understanding ($p \leq 0.05$) affected interprofessional stroke team functioning. Personal autonomy (individual level)

Table 1. Descriptive statistics for personal autonomy, personal development, communication and role understanding, social well-being, interprofessional education, and interprofessional stroke team functioning

n=558	Minimum	Maximum	Mean	SD
Interprofessional stroke team functioning	15.00	40.00	26.65	3.80
Personal autonomy	6.00	12.00	9.71	1.35
Personal development	8.00	23.00	15.93	2.20
Communication and role understanding	16.00	32.00	24.28	2.53
Social well-being	8.40	24.00	15.64	2.27
Interprofessional education	0.00	1.00	0.63	0.49

Table 2. Descriptive statistics for team-level communication and role understanding and team cohesion

	Communication and role understanding	Cohesion
Team 1 (n=23)	24.88	3.17
Team 2 (n=13)	22.46	3.08
Team 3 (n=8)	24.71	3.13
Team 4 (n=5)	26.00	3.50
Team 5 (n=12)	24.00	2.83
Team 6 (n=22)	23.05	3.10
Team 7 (n=15)	25.54	3.31
Team 8 (n=8)	25.38	2.88
Team 9 (n=27)	25.15	3.42
Team 10 (n=10)	23.22	3.10
Team 11 (n=8)	23.57	3.63
Team 12 (n=8)	26.25	3.25
Team 13 (n=15)	23.67	3.20
Team 14 (n=30)	24.44	3.30
Team 15 (n=27)	24.83	3.42
Team 16 (n=14)	25.17	3.38
Team 17 (n=13)	22.58	2.92
Team 18 (n=13)	23.93	2.83
Team 19 (n=12)	24.74	3.75
Team 20 (n=10)	25.00	3.20
Team 22 (n=30)	23.99	3.00
Team 23 (n=18)	24.71	3.00
Team 24 (n=23)	22.84	2.71
Team 25 (n=19)	25.91	3.22
Team 26 (n=12)	23.55	2.64
Team 27 (n=26)	24.10	3.52
Team 28 (n=14)	24.31	2.86
Team 29 (n=19)	23.83	3.05
Team 30 (n=11)	25.91	3.45
Team 31 (n=28)	23.84	3.29
Team 32 (n=19)	24.32	3.05
Team 33 (n=5)	22.23	2.80
Team 34 (n=22)	24.00	3.55

and team cohesion (team level) had no significant relationship with interprofessional stroke team functioning.

Discussion

The aim of this study was to examine interprofessional stroke team success factors and identify the mechanisms needed to improve teamwork. Our multilevel regression analysis indicated that social well-being, communication and role understanding were strong

contributors to interprofessional stroke team functioning. Suter and colleagues [16] found the same results; other studies have documented the negative impact of communication problems within interprofessional teams on work processes and patient safety [15, 17]. Poor communication can cause confusion and a loss of confidence within the team. Maintaining good communication is thus imperative.

Professionals working in interprofessional teams face the relatively unfamiliar position of defending their professional work domains, in contrast to the well-defined hierarchical power structure of traditional, physician-controlled healthcare cultures [35]. Such a process often leads to role blurring [19, 20] and lower social well-being. Role understanding and social well-being are thus important factors in interprofessional stroke team functioning. Interprofessional teamwork requires management of team processes as well as individual identities, while maintaining agreement within the team that each member’s expertise and contribution to patient care is valuable [36, 37]. Poor role understanding and social discomfort compromise team involvement, management capabilities, and negotiation. Team-level role understanding and communication also affect team functioning. Such constructs result from consensus; the property is essentially shared. While measured at the individual level, the construct refers to the higher team level.

The professionals in our study identified personal development and interprofessional education as strong contributors to interprofessional stroke team functioning. These results are in line with earlier studies that have found training, education, and interpersonal skills potentially important to improving collaboration within interprofessional teams [23, 24]. Sharing knowledge and skills has a positive synergetic influence on patient care [38].

We did not find a significant relationship between team-level social cohesion and interprofessional stroke team functioning, which aligns with findings that working in an integrated care pathway does not automatically create or enhance team cohesion [39]. Team cohesion appears to take time to establish, requiring support and

Table 3. Multilevel regression analyses on interprofessional stroke team functioning

Model	1		2	
	β	SE	β	SE
Constant	26.622***	0.236	4.602	4.993
Individual level				
Personal autonomy			0.133	0.114
Personal development			0.482***	0.070
Communication and role understanding			0.401***	0.094
Social well-being			0.322***	0.069
Interprofessional education			0.261***	0.076
Shared team level constructs				
Communication and role understanding			0.442*	0.198
Cohesion			1.264	0.670
-2 log likelihood	2713**		2537***	
Variance level 1 individual	13.616***	0.090	9.812***	0.063
Variance level 2 team	0.861	0.507	0.148	0.191
Explained variance level 1 (total)			26%	
Explained variance level 2 (total)			5%	

Notes: * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$.

leadership at the outset to assist in the acquisition of a clear, shared and attainable vision, creating a sense of belonging within each team member.

Although personal autonomy has been recognized as a means to improve individual and team functioning [25, 26], our study did not find a significant relationship. This could be because we investigated interprofessional team functioning in an integrated care context, which requires multidisciplinary interventions designed to integrate discrete areas of expertise. Care transitions from individual consultation with high levels of autonomy to interprofessional teamwork with heavy focus on collaboration rather than autonomy. Optimal collaboration and coordination in the delivery of integrated care are essential requirements for providing high-quality stroke care. Interprofessional team processes are known to challenge the established hierarchy's power, authority, and autonomy [36]. Furthermore, the competencies of professionals in multidisciplinary teams tend to overlap, requiring them to share responsibilities to varying degrees [21].

Limitations

Because our aim was to assess professionals' views, we used subjective rather than objective (e.g. process indicators or patient outcomes) measurements. The social desirability of professionals' wanting to report positive stroke care functioning could have affected our results. Further research is necessary to investigate the applicability of these findings and use of the instruments in other settings. Regional response rates varied widely (29% to 58%), but only two had response rates below 30% (both 29%). Both had recently received questionnaires regarding a related topic, which may have caused their low response rates. We do not know how the results might have varied with a better

response. Our cross-sectional design did not examine whether improvements in social well-being, personal development, interprofessional education, communication and role understanding (at individual and team levels) actually does lead to improved interprofessional team functioning. Longitudinal studies are necessary to identify and follow causal relationships. We did not include organizational context and leadership style, which may also affect interprofessional stroke team functioning. We recommend including these factors in future research.

Conclusion

Our study identified the important contributors to interprofessional stroke team functioning according to professionals working in stroke services. They conveyed that communication and role understanding (at individual and team levels), personal development, interprofessional education, and social well-being were important. Personal autonomy and team-level cohesion did not significantly affect interprofessional stroke team functioning.

The findings increase our understanding of interprofessional stroke team functioning and thus the success of integrated stroke services. Variations in patient care and outcomes within integrated stroke services are due in part to the functioning of interprofessional stroke teams. Our findings suggest that interventions to improve team members' social well-being, communication, and role understanding will improve team performance. To further advance interprofessional team functioning, healthcare organizations should pay attention to the development of professionals' interpersonal skills and interprofessional education.

Reviewers

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Appendix A

Interprofessional stroke team functioning (never—sometimes—often—always)

1. To what extent do team members rely on written memos to keep up with important events and situations?
2. When decisions are being made, to what extent are the relevant persons asked for their ideas?
3. To what extent do people on the stroke team keep each other informed about important events and situations?
4. To what extent do persons on the stroke team exchange opinions about work?
5. To what extent do members of the stroke team plan together and coordinate their efforts?
6. To what extent does the stroke team make good decisions and solve problems well?
7. To what extent do members of the stroke team help you find ways to do a better job?
8. To what extent do members of the stroke team offer each other new ideas or solutions to job related problems?
9. How much say or influence do people in positions, such as yours have on the way the stroke service is run?
10. How much do you depend on members of the stroke team for suggestions and advice about particular problems you face on the job?

Personal autonomy (totally disagree—disagree—agree—totally agree)

1. I know the goals and demands of my work.
2. I can organize my own work.
3. I can work independently.

Personal development (totally disagree—disagree—agree—totally agree)

1. I have plenty of opportunities to attend training courses.
2. It is possible to work in another part of the stroke unit to improve knowledge and skills.
3. I regularly receive information about the quality of my work to improve my functioning.
4. There are clear guidelines within our organization.
5. New colleagues are well oriented in our organization.
6. The absence of competent and adequately trained personal hampers my ability to function.

Communication and role understanding (totally disagree—disagree—agree—totally agree)

1. Communication within this team is generally guarded.
2. I am satisfied with my role on this stroke team.
3. Team members of the stroke team do not listen to each other.

4. There is little evidence of conflict between team members on the stroke team.
5. I do not feel that the other team members of the stroke team consider my input when making decisions.
6. I feel that I am a member of the stroke team.
7. Team members of the stroke team are generally uncooperative.
8. Decisions are often not explained to other team members of the stroke team.

Social well-being (never—sometimes—often—always)

1. How often do you feel your work makes an important contribution for the delivery of high quality care?
2. How often do you feel your work makes an important contribution to the well-being of patients?
3. How often do you feel your colleagues pay attention to you?
4. How often do you feel your colleagues care about your feelings?
5. How often do your colleagues see you as somebody with authority?
6. How often do your colleagues think you perform better than others?