Interprofessional teamwork, quality of care and turnover intention in geriatric care: A cross-sectional study in 55 acute geriatric units

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A B S T R A C T

Background and objectives: The complex health problems of older persons require that health professionals closely work together, in particular when an acute decline necessitates admission at an acute geriatric unit. These working conditions may cause additional stress in staff. This study aims to identify the relation between interprofessional teamwork, the quality of care and turnover intention in acute geriatric units.
Design, setting, participants and methods: Perceptions of interprofessional teamwork, quality of care and turnover intention among team members of 55 acute geriatric units were measured using validated questionnaires. A multilevel linear regression model was built for quality of care and logistic regression for turnover intention, with random intercept for acute geriatric unit.
Results: The overall response rate was 60%. Of the 890 respondents, 71% were nursing professionals, 20% allied health professionals, 5% physicians, and 4% administrative staff. Twenty-three percent reported poor to fair quality of care in their unit; 19% was not sure that patients or families had been given enough means to organise care after discharge. Fifteen percent reported turnover intention (18%, 8%, 9% and 11% among nursing professionals, allied health professionals, physicians and administrative workers respectively, p = 0.005). Higher perceived interprofessional teamwork was related to higher quality of care (estimated coefficient 0.05, p < 0.001) and lower turnover intention in nursing professionals only (estimated OR 0.94, p < 0.001).
Conclusion: Creating a care environment of good interprofessional teamwork can help acute geriatric units to retain nursing professionals in the job and achieve higher quality of care.

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What is already known about the topic?

- Outside the specific setting of acute geriatric units, an association between interprofessional teamwork and nurses' appraisal of the quality of patient care has been shown.
- Determinants of turnover intention in nurses are organisational factors such as interprofessional teamwork and management.
- In caring for frail older persons at the end of their lives, particular emphasis on matters of ethics is required, however the link between the way difficult cases are discussed and decided upon (also called the ethical climate) and quality of care is not known.

What this paper adds

- Also in specialized geriatric care, known for its strong interprofessional character, the quality of interprofessional teamwork is associated with quality of care; this association was not only established in nursing professionals, but also in physicians and other allied health professionals.
- In particular nurses working in acute geriatric units are at risk for turnover intention.
- Shared interprofessional reflection and decision-making about difficult patient cases is associated with quality of care but not with turnover intention.

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1. Background and objectives

Older patients admitted to the acute hospital often have complex health needs and typically require care by professionals from multiple health care disciplines. Bringing team members with different professional backgrounds to act together in a coordinated way is crucial to fully appreciate the patients' context and to work towards holistic care planning (Tsakitzidis et al., 2016). Interprofessional teamwork goes beyond multiprofessional teamwork in which collaboration among team members may be limited to the exchange of information on demand. However, to have an authentic interprofessional context, the interaction must involve common goal setting, shared decision making and collaboration on the tasks at hand (Reeves et al., 2017; Tsakitzidis et al., 2016). The assets of interprofessional teamwork include the management and organisational support, patient files management, meetings and decision-making methods, and also individual traits of team members such as respect, collaborative skills and belief in the power of interprofessional teamwork (Mickan, Rodger, 2005; Vyt, 2015).

Acute geriatric units are hospital units with their own physical location and structure and run by a specialized interprofessional team (physicians, nurses, psychologists, social workers, and allied health professionals such as occupational therapists, physical therapists, speech therapists, and dieticians) with direct responsibility for the care of elderly people with acute medical disorders, including acute exacerbations of chronic diseases (Baztan et al., 2009; Clegg et al., 2013). The benefit of care in acute geriatric units compared to conventional hospital wards is attributed to comprehensive assessment, early rehabilitation, early discharge planning and patient-centred care within the interprofessional team (Flood et al., 2013; Malone et al., 2014; Montagnini et al., 2014). However, the experienced differences in the quality of care

between units, despite comparable staffing levels, comparable competencies, same assessment tools and discharge planning, led the author group to study if the quality of teamwork in itself is an important determinant of quality of care.

Outside the specific setting of acute geriatric units, there is some indication that interprofessional teamwork is related to the quality of patient care (Aiken et al., 2012; Boorsma et al., 2011; Manser, 2009; Martin et al., 2010). Yet, the overall quality of intervention studies is poor to absolutely confirm their benefit (Reeves et al., 2017). However, it is evident that this field is in full development. A recent review of intervention studies specifically in elderly persons showed positive effects of interdisciplinary teamwork; however, none of the studies were performed in specialised acute geriatric units (Tsakitzidis et al., 2016).

Job turnover in nursing professionals is considered a serious problem that has an impact on many levels, including the hospital, the ward, the team members and the patients. Excessive turnover intention reduces a unit's ability to meet patients' needs and to ensure high-quality care (Galletta et al., 2013; Manser, 2009). Determinants of turnover intention are organisational factors such as interprofessional teamwork and management (Currie and Hill, 2012; Hayes et al., 2012; Körner et al., 2015).

To the best of our knowledge, our group was the first to perform a study on the quality of interprofessional teamwork in acute geriatric units. In an earlier paper, we described how four types of interprofessional teamwork could be defined based on the six dimensions of interprofessional teamwork (Piers et al., 2017). The main objective of this paper is to link interprofessional teamwork to the quality of care and turnover intention in acute geriatric units (Fig. 1). We hypothesised that the better the quality of interprofessional teamwork, the ethical climate and incident reporting, the better the overall quality of care in a particular unit and the lower the turnover intention. Additionally, we wanted to investigate if the associations between interprofessional
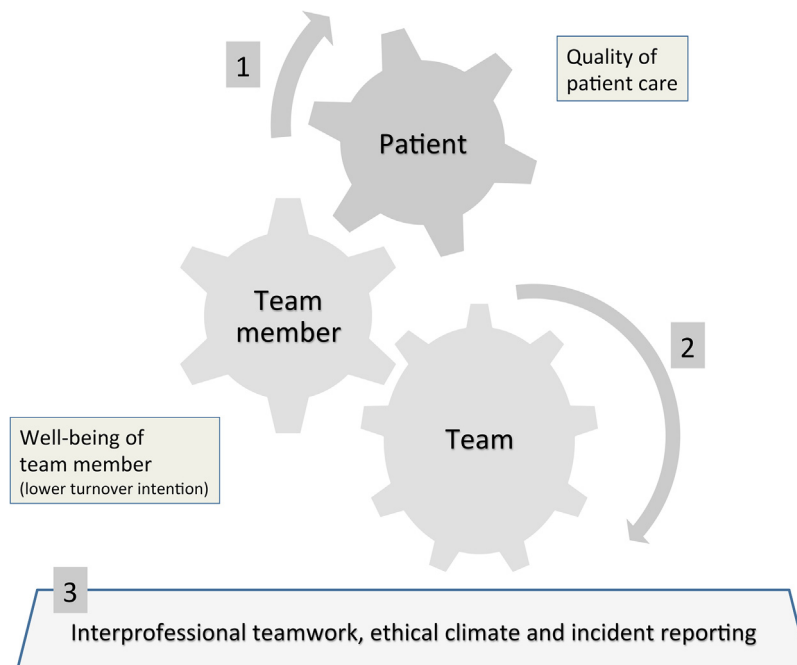

Fig. 1. Conceptual framework.
It is the organisation's duty to create a solid basis empowering all team members and the team as a whole to identify and respond to patients' true needs and thus improve the quality of care. Good teamwork may also favour the well-being of individual team members and decrease the intention to leave the job.
Arrow 1: Good care by an individual team member lifts up the quality of care for an individual patient.
Arrow 2: By uplifting the quality of teamwork, each individual team member is strengthened in providing care, thus improving the quality of care on the unit as a whole.
Basis 3: Basis of interprofessional teamwork. In this study, three dimensions were measured: interprofessional teamwork in general, interprofessional teamwork concerning difficult patient cases (also called ethical climate) and incident reporting.

teamwork and both outcome measures vary according to professional roles and the four different types of interprofessional teamwork.

2. Research design and methods

2.1. Setting and procedure

A large-scale, cross-sectional survey study was designed. Recruitment of teams for the study was done through the working group of acute geriatric unit head nurses of the Belgian Society of Geriatrics and Gerontology. The researchers informed all head nurses and geriatricians about the design of the study.

2.2. Instrument

Head nurses filled out a questionnaire on the characteristics of the acute geriatric unit. Team members filled out a self-assessment questionnaire on (1) interprofessional teamwork, (2) quality of care and (3) turnover intention. Three dimensions of interprofessional teamwork were assessed. For *interprofessional teamwork in general*, 20 items were based on Interprofessional Practice and Education Quality Scales (IPEQS) (Vyt, 2015,Vyt, 2019). For interprofessional teamwork concerning difficult patient cases, a six-item *ethical climate* questionnaire was used (Piers et al., 2012), and items concerning *incident reporting in the team* were based on three items of the Patient Safety questionnaire (Colla et al., 2005).

As in Aiken et al. (2012), we asked team members to answer on a Likert scale going from '1 = weak' to '4 = very good': '*How would you rate the quality of care delivered on your acute geriatric unit*', and on a Likert scale from '1 = not sure at all' to '4 = very sure': '*How sure are you that patients and families had been given enough means to organise the care at home after discharge from your ward*'. We summed up both scores to calculate the sum score.

The intention to leave the job may not mean to leave the actual job soon; however, the turnover intention is considered a good proxy for actual turnover (De Gieter et al., 2011). The turnover intention was also assessed by a 4-point Likert scale from '1 = strongly disagree' to '4 = strongly agree': 'I think of leaving

my job'. This variable was recategorised to 'agree' or 'not agree' (Piers et al., 2012).

2.3. Data collection

The questionnaire was uploaded in Lime Survey, a secure open-source survey application maintained and supported by Griffith University. The link to this questionnaire was first sent to the head nurses, and they forwarded the link to all the team members by e-mail. Team members participated voluntarily. To protect confidentiality, the data downloads were accessible only to the principal investigators and not to third parties. Data were collected between October 9th and November 20th, 2015.

2.4. Statistical analysis

Descriptive results are presented as number or percentages for categorical variables and means for continuous data. Pearson chi-square test was used for comparing categorical variables between the types of interprofessional teamwork and different professional roles, and ANOVA test was used for comparing continuous variables.

To assess whether the quality of care and turnover intention as outcome parameters are related to individual team member or acute geriatric unit characteristics or to a combination, a multilevel linear regression model was built for the quality of care and logistic regression for turnover intention, with a random intercept for the acute geriatric unit. A backward selection strategy was chosen. For details on model building, please see Appendix 2 in the Supplementary data on the journal website. Statistical analyses were performed using the Statistical Package for Social Sciences (SPSS) version 24.0. The Holm–Bonferroni method was used to correct for multiple testing.

2.5. Ethical committee

The study protocol was approved by the ethical committees of all the participating hospitals (Belgian registration number:

Table 1
Comparison of outcome measures between the different professional roles.

	Overall N = 890	Nursing professional N = 627	Other allied health professional N = 180	Physicians N = 47	Administrative staff N = 36	p-value
Perceived quality of care						
How would you rate the quality of care delivered on your acute geriatric unit?						
Weak (=1)	1.5%	1.8%	1.1%	0%	0%	*<0.001
Satisfactory (=2)	21.7%	23.9%	19.4%	6.4%	13.9%	
Good (=3)	58.7%	59.5%	58.3%	51.1%	55.6%	
Very good (=4)	18.2%	14.8%	21.1%	42.6%	30.6%	
How sure are you that patients and families had been given enough means to be able to organize the care at home after discharge from your ward?						*0.006
Not sure at all (=1)	0.6%	0.3%	1.1%	0%	2.8%	
Doubtful (=2)	18.4%	21.4%	11.1%	10.6%	13.9%	
Sure (=3)	70.1%	68.4%	75.0%	68.1%	77.8%	
Very sure (=4)	10.9%	9.9%	12.8%	21.3%	5.6%	
Mean sum score quality of care (range from 2 to 8)	5.85	5.75	5.99	6.47	6.03	*<0.001
Turnover intention						
I think of leaving my job						*0.010
Disagree strongly	39.6%	35.1%	50.0%	48.9%	54.3%	
Disagree	45.4%	47.3%	41.7%	42.6%	34.3%	
Agree	12.7%	14.9%	7.2%	6.4%	11.4%	
Strongly agree	2.3%	2.7%	1.1%	2.10%	0%	

B670201525187). All participating team members signed an informed consent electronically.

3. Results

Sixty-five head nurses from 19 different hospitals agreed to cooperate; four teams could not get ethical approval on time and six teams did not return any questionnaire (Piers et al., 2017). Fifty-five acute geriatric units were included in the study. The 55 head nurses sent out the questionnaire to 1538 team members, of whom 890 replied, resulting in an overall response rate of 60%. Nursing professionals were the largest group with the largest response rate: 627 out of 909 eligible nurses replied with a response rate of 69%. Response rates were 51% for physicians (47/93), 56% for other allied health professionals (180/324) and 17% for administrative staff (36/212).

Three out of four participants scored the quality of care on their ward as good or very good and were sure or very sure that patients and families had been given enough means to organise the care at home. The mean sum score for perceived quality of care (ranging between 3 and 8) was 5.85 (95% CI [5.78–5.92]) (Table 1).

A total of 15% of participants indicated that they had the intention to leave their job (18%, 8%, 9% and 11% among nursing professionals, allied health professionals, physicians and administrative workers respectively, p = 0.005) (Table 1).

The characteristics of the acute geriatric units are shown in Appendix 1. The mean length of stay is 15.7 days, and mean mortality rate was 7.7%. In an earlier paper (Piers et al., 2017), we described how four types of interprofessional teamwork could be defined in acute geriatric wards in Belgium, based on the six dimensions of interprofessional teamwork: 1) collaborative practice and experience; 2) managerial coaching and open team culture; 3) shared reflection and decision-making; 4) patient files facilitating teamwork; 5) members' belief in the power of teamwork and 6) members' comfort in reporting incidents. In type 1 (socket-type) teams, team members performed collaborative teamwork, shared reflection and decision-making well, but perceived a lack of support from patient files, the only high score was given for the belief in the power of interprofessional collaboration. Team members working in type 3 (wheel-type) gave average to high scores to all domains, and they gave the highest score to patient files and incident reporting. In type 4 (magnet-type), team members gave the highest scores to managerial coaching, shared reflection and decision-making. However, individual type 4 team members least believed in the power of interprofessional teamwork and gave low scores to patient files' facilitating teamwork.

The units of these four different types of interprofessional teamwork did not differ in the acute geriatric unit and team member characteristics; except that units classified as type-4 are smaller, have most team members working full-time and in night shifts. Please see the eTables in Appendix 1 in the supplementary data on the journal website.

Table 2A
Factors associated with perceived quality of care in acute geriatric units.

	Estimated differences in mean perceived quality of care	p-value
Level 1: team member characteristics and perceived teamwork		
Interprofessional teamwork in general total score (range: 39–100)	**0.05 [0.04; 0.06]**	***<0.001**
Ethical climate total score (range: 11–30)	**0.05 [0.03; 0.07]**	***<0.001**
Age of the team member		*0.010
Less than 25 years vs More than 55	−0.20 [−0.43; 0.03]	0.082
Between 25 and 34 vs More than 55	−0.25 [−0.44; −0.06]	*0.011
Between 35 and 44 vs More than 55	**−0.32 [−0.52; −0.12]**	***0.002**
Between 45 and 54 vs More than 55	−0.11 [−0.31; 0.09]	0.291
Level 2: acute geriatric unit characteristics		
Mean Mortality Rate in 2014 (range: 3–15%)	−0.05 [−0.08; −0.02]	*0.004
Logistic staff available: Yes vs no	0.17 [0.01; 0.33]	*0.037
Administrative worker available : Yes vs no	0.25 [0.08; 0.43]	*0.006
Number of nursing professionals/day/24 beds (range: 5.5–10.4)		0.055
In Type 1 = socket	0.10 [− 0.04; 0.23]	0.171
In Type 2 = maze	−0.22 [− 0.43; −0.02]	*0.036
In Type 3 = wheels	0.06 [− 0.03; 0.15]	0.209
In Type 4 = magnet	0.11 [− 0.14; 0.37]	0.378
Presence of nursing professionals on doctor's daily rounds		0.062
In Type 1 = socket: present (vs not)	−0.22 [−0.52; 0.08]	0.141
In Type 2 = maze: present (vs not)	0.30 [0.05; 0.56]	*0.022
In Type 3 = wheels: present (vs not)	−0.02 [−0.33; 0.29]	0.885
In Type 4 = magnet: present (vs not)	0.14 [−0.50; 0.78]	0.664
Presence of nursing professionals in multidisciplinary meeting		*0.014
In Type 1 = socket: present (vs not)	−0.36 [− 0.68; −0.04]	*0.029
In Type 2 = maze : present (vs not)	0.22 [−0.07; 0.51]	0.136
In Type 3 = wheels: present (vs not)	−0.29 [− 0.53; −0.05]	*0.018
In Type 4 = magnet: present (vs not)	0.25 [−0.50; 0.99]	0.511

The variables included in the analysis are for the first level (team member): demographic data, professional role and working conditions, interprofessional teamwork in general, ethical climate, incident reporting. For the second level (team) following variables are included: cluster or type of interprofessional teamwork, mean number of beds, mean length of stay and mean mortality rate in 2014, number of nursing professionals per 24 beds per day, availability of different professional roles in the team, presence of nursing professionals in multidisciplinary meeting and doctor's daily round, and the way nursing professionals do handover. Acute geriatric unit is included as a random effect. All continuous, independent variables are centered prior to the model building process. We used 890 data for the quality of care model. AIC of the quality of care model is 2163. Significant main effects and interactions are shown with an asterisk. The Holm–Bonferroni method is used to correct for multiple testing: the p-values that survived are indicated in bold. For details on model building, see Appendix 2 in the supplementary data on the journal website.
An estimated difference in mean perceived quality of care of 0.05 for interprofessional teamwork means that if the interprofessional teamwork score (ranging from 39 to 100) rises by 1 unit, then the quality of care score will rise 0.05 (on a scale ranging from 2 to 8); or put in more relevant numbers, if the teamwork score rises 20 units, then the quality of care score will rise 1.00 (on a scale ranging from 2 to 8), which is clinically significant.

3.1. Multivariate analysis for outcomes quality of care and turnover intention

The results of quality of care sum scores are presented as (adjusted) estimated coefficients (linear model) in Table 2A. Higher perceived interprofessional teamwork and higher perceived ethical climate are associated with higher perceived quality of care (p < 0.001), adjusted for team member and unit characteristics included in the final model. Professional role is not associated with the quality of care, indicating that different professionals scored the quality of care on their unit similarly. Higher mean perceived quality of care scores are found when logistic staff (p = 0.004) and administrative workers (p = 0.037) are available; however, these p-values did not survive Holm-Bonferroni correction.

Results for turnover intention are presented as (adjusted) odds ratios in Table 2B. Allied health professionals have the lowest odds of turnover intention compared to nurses when adjusting for other

variables in the model (p = 0.016); however, this p-value did not survive Holm-Bonferroni correction. The association of interprofessional teamwork with turnover intention depends on the role of the team member: only for nursing professionals, the odds of turnover intention is lower for increasing interprofessional teamwork total score (p < 0.001).

For team members with the same individual and unit characteristics, the odds of turnover intention is higher for younger compared to the oldest team members (p = 0.001). Independent from their age, starters have the significantly lower probability of turnover intention compared to team members with more than 25 years of working experience (p = 0.001). The type of teamwork is also associated with turnover intention (p < 0.001): team members from type 1 (socket) have higher turnover intention compared to team members from type 4 (magnet) units. The availability of additional professionals in acute geriatric units is negatively associated with the probability of turnover intention

Table 2B
Factors associated with turnover intention in acute geriatric units.

	Estimated OR	p-value
Level 1: team member characteristics and perceived teamwork		
Role		0.033
Physicians vs Nursing professionals	0.39 [0.09; 1.67]	0.202
Other allied health professionals vs Nursing professionals	0.34 [0.14; 0.82]	*0.016
Administrative staff vs Nursing professionals	0.47 [0.12; 1.76]	0.259
Interprofessional teamwork in general total score		*0.044
By Physicians	1.09 [0.93; 1.27]	0.281
By Other allied health professionals	1.00 [0.93; 1.07]	0.988
By Administrative staff	0.89 [0.79; 0.99]	*0.048
By Nursing professionals	**0.94 [0.90; 0.97]**	***<0.001**
Age of the team member		*0.005
Less than 25 years vs More than 55	**7.25 [2.24; 23.47]**	***0.001**
Between 25 and 34 vs More than 55	**3.67[1.67; 8.07]**	***0.001**
Between 35 and 44 vs More than 55	2.85[1.35; 6.02]	*0.006
Between 45 and 54 vs More than 55	1.64 [0.83; 3.23]	0.155
Years of working experience		**0.002**
Less than 2 years vs More than 25 years	**0.11 [0.03; 0.41]**	***0.001**
Between 2 and 9 years vs More than 25 years	0.52 [0.21; 1.29]	0.156
Between 10 and 25 years vs More than 25 years	0.73 [0.30; 1.76]	0.476
Level 2: acute geriatric unit characteristics		
Cluster or type of interprofessional team		***<0.001**
Type 1= socket vs Type 4 = magnet	7.86 [1.84; 33.64]	*0.005
Type 2= maze vs Type 4 = magnet	0.99 [0.22; 4.40]	0.989
Type 3= wheels vs Type 4 = magnet	0.35 [0.06; 1.92]	0.226
Number of beds (range: 15 to 36)	0.98 [0.87; 0.99]	*0.020
Mean length of stay in 2014 (range: 10.3 to 26.7 days)	0.91 [0.85; 0.97]	*0.006
Logistic staff available: Yes vs no	0.47 [0.27; 0.79]	*0.005
Administrative worker available : Yes vs no	**0.35 [0.21; 0.58]**	***<0.001**
Speech therapist available: Yes vs no	**0.37 [0.22; 0.63]**	***<0.001**
Physician in training available: Yes vs no	**0.58 [0.43; 0.78]**	***<0.001**
Psychologist available: Yes vs no	2.15 [1.17; 3.96]	*0.014
Presence of nursing professionals on doctor's daily rounds		***<0.001**
In Type 1 = socket: present (vs not)	0.39 [0.18; 0.85]	*0.017
In Type 2 = maze: present (vs not)	1.37 [0.63; 2.96]	0.430
In Type 3 = wheels: present (vs not)	**16.9 [5.10; 56.11]**	***<0.001**
In Type 4 = magnet: present (vs not)	0.11 [0.02; 0.87]	*0.036
At least 1 handover in group		***<0.001**
In Type 1 = socket: yes (vs. not)	**0.44 [0.21; 0.91]**	*0.027
In Type 2 = maze: yes (vs. not)	**2.60 [1.32; 5.10]**	*0.006
In Type 3 = wheels: yes (vs. not)	**0.49 [0.27; 0.90]**	*0.021
In Type 4 = magnet : yes (vs. not)	1.67 [0.42; 6.64]	0.469

Variables included in the analysis are for the first level (team member): demographic data, role and working conditions, interprofessional teamwork in general, ethical climate, incident reporting. For the second level (acute geriatric unit) following variables are included: type of teamwork, mean number of beds, mean length of stay and mean mortality rate in 2014, number of nursing professionals per 24 beds per day, availability of different professional roles in the team, presence of nursing professionals in multidisciplinary meeting and doctor's daily round, and the way nursing professionals do handover. Acute geriatric unit is included as a random effect. All continuous, independent variables are centered prior to the model building process. We used 873 valid data on turnover intention. QIC of the turnover model is 658. Significant main effects and interactions are shown with an asterisk. The Holm–Bonferroni method is used to correct for multiple testing: the p-values that survived are indicated in bold. For details on model building, see Appendix 2 in the Supplementary data.

(administrative worker available, p < 0.001, speech therapist: p < 0.001, or physician in training: p < 0.001). The association of the presence of nursing professionals on doctors' daily rounds and handover in group on the probability of turnover intention depends on the type of interprofessional teamwork.

4. Discussion

In this study, better interprofessional teamwork is associated with better quality of patient care and a lower turnover intention in nurses. These results validate the conceptual framework (Fig. 1).

One in four team members reported problematic quality of patient care, which is average when compared to the international study in general hospitals with percentages varying between 11 and 47% (Aiken et al., 2012). One in five reported that patients and families cannot manage care after discharge, which is lower compared to the percentages variation between 31 and 73% found by Aiken et al. (2002). This may endorse that discharge policy is a strong asset of specialised geriatric care compared to other hospital wards. Turnover intention is highest in nursing professionals. A total of 18% of nurses in this study think about leaving their job, which is considerable but rather low compared to other studies: 28% in a study conducted among 29,742 nurses working in 200 acute hospitals in the US (Ma et al., 2015); 14–49% in the study of Aiken et al. (2012). Also physicians in this study reported lower intention to leave their job compared to other studies. In this study, the turnover intention in physicians was 10%, in literature we found numbers between 15% in Taiwan (Tsai et al., 2016) and 24% in US physicians (Linzer et al., 2017). The question, whether these lower percentages in turnover intention are partly due to the unique working environment of acute geriatric units or to other factors, needs to be addressed by other research methodologies.

Higher quality of care is obtained when there is better interprofessional teamwork. However, professional role and staffing number of nursing professionals are not related. Nurses' perceptions of interprofessional teamwork and the availability of administrative workers and speech therapists were associated with lower turnover intention. It seems that in acute geriatric units with a mean staffing of eight nursing professionals per 24 beds per day, rather than the support from other team members (such as administrative staff), is required for both quality of care and job retention, a finding confirmed in other settings than geriatric care (Aiken et al., 2002; Aiken et al., 2012; Currie and Hill, 2012; Hayes et al., 2012). Similarly, we found that those team members working in a type-1 (socket) team are at increased risk for turnover intention compared to type-4 (magnet type with strongest managerial support). Not job demand per se but rather a high job demand combined with lack of support from management and other team members are the factors that lead to greater turnover intention in nurses (Körner et al., 2015; Linzer et al., 2017; Tsai et al., 2016).

Shared reflection and decision-making about difficult patient cases (or the ethical climate) are also associated with the quality of care, but not with turnover intention. Further exploration of this finding is needed; however, some literature points out that when nurses are more involved in ethical decision-making, there is even increased moral distress and turnover intention (Oh, Gastmans, 2015; Peter et al., 2004; Piers et al., 2012). Importantly, organisational support for team members' moral actions is pivotal to reinforce their confidence to change things for the benefit of the patient, in particular, on nursing professionals who often feel powerless to influence team practices (Bruce et al., 2015; Kälvemark Sporrong et al., 2007).

4.1. Strengths and limitations

The major strength of this study is its innovative nature, as it is the first study on the impact of interprofessional teamwork exclusively in acute geriatric units. Second, we included a large sample of 55 acute geriatric units in Belgium. The concept of 'acute geriatric unit' defined as a medical unit that uses an interprofessional team specialised in geriatric care is established worldwide (Baztan et al., 2009; Clegg et al., 2013; Flood et al., 2013; Malone et al., 2014; Montagnini et al., 2014); therefore, we believe that the results are generalizable to acute geriatric units outside Belgium.

An important limitation is that our findings are based on cross-sectional data; thus, we cannot establish causality. Second, we used team member reports to measure the quality of care instead of objective patient outcome measures such as quality of life, pain, falls and hospital readmissions (Ma et al., 2015; Tsakitzidis et al., 2016); however, researchers have shown that perceptions of team members who provide direct patient care are an important source of information and are linked to patient outcomes (Aiken et al., 2012; McHugh and Stimpfel, 2012). In the same direction, this study shows that professional role was not related to the quality of care but to turnover intention, which suggests that team members can take distance in their appraisal of the quality of care.

5. Implications for practice

The results of our study indicate that the quality of interprofessional teamwork might be a promising and rather low-cost area to improve the quality of care and also to retain nurses working in acute geriatric care. Several interventions are available for improving interprofessional teamwork such as TEAM STEPPS program, interprofessional education (Montagnini et al., 2014), improving supportive nursing leadership (Reeves et al., 2017) and the ethical climate (Kälvemark Sporrong et al., 2007; Van den Bulcke et al., 2018). Any such intervention should be tailored to the needs of the team and evaluated through further research to define evidence-based best practice (Reeves et al., 2017; Körner et al., 2015).

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.ijnurstu.2018.11.011.

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