HSI Health Sciences Investigations Journal

share
Send us an email: info@hsijournal.org
https://www.hsijournal.org

ISSN Online 2704-4890 | ISSN Print 2720-7609

Online first publication

Original Research Article

HSI Journal (2021) Volume 2 (Issue 2): https://doi.org/10.46829/hsijournal.2021.12.2.2261-272

Open Access

Examining the relationship of organizational mechanisms and relational coordination on the outcome of care coordination among nurses at the unit level of the Greater Accra Regional Hospital

Adelaide MA Ofei [1*]; Salome T Frimpong [2]

[1] Department of Research, Education and Administration, School of Nursing and Midwifery, College of Health Sciences, University of Ghana, Accra, Ghana;[2] Greater Accra Regional Hospital, Ghana Health Service, Accra, Ghana.

Received July 2021; Revised September 2021; Accepted October 2021

Abstract

Background: Nurses and other healthcare professionals function interdependently for the coordination of patient care which can be unpredictable and varies from setting to setting.

Objective: The study examined the influence of organizational mechanisms and relational coordination on the outcome of care coordination among nurses in the unit.

Methods: A cross-sectional approach was adopted, and 262 participants were selected from eight units in the hospital using a convenient sampling technique. A structured questionnaire was used in gathering data.

Results: Average organizational mechanism in the units was 3.43. Nurses were fairly trained on information technology [mean ± standard deviation (SD): 3.27 ± 0.93]; task characteristics influenced care coordination among nurses (mean ± SD: 3.79 ± 0.93); nurses' attitude towards their patient fostered care coordination (mean ± SD: 3.47 ± 0.92); whilst the organizational environment strongly provided clinical supervision (mean ± SD: 3.69 ± 0.84). Average relational coordination in the units was 4. Nurses were aware of their roles during the performance of tasks (mean ± SD: 4.33 ± 0.76); nurses showed mutual respect during discharge of duties (mean ± SD: 4.08 ± 0.92); good nurse-patient relationship strongly facilitated effective care planning (mean ± SD: 4.26 ± 0.73); and nurses welcome other nurses' opinions during tasks performance (mean ± SD: 4.05 ± 0.98). The mean value for the outcome of care coordination was 4.08. Organizational mechanisms and relational coordination influence the outcome of care coordination. Good care coordination in the unit was 82.6%.

Conclusion: Organizational mechanism and relational coordination influenced the practice of care coordination in the 8 units. Strengthening organizational structure, information technology, interpersonal relationship, and improving the level of care coordination are essential to facilitate quality healthcare delivery and better patient outcomes.

Keywords: Nurses, care coordination, organizational mechanisms, relational coordination, unit, regional hospital

INTRODUCTION

Healthcare institutions ensure that organizational mechanisms such as task characteristics, organizational structure, knowledge and information technology, administrative operational processes as well as cultural factors are well managed to enable the workforce to deliver quality healthcare services [1]. These factors are invaluable in promoting care coordination necessary for the delivery of prompt and good quality healthcare services. However, healthcare providers encounter many challenges related to the management of the health needs of clients. Among these challenges is the coordination of care [2]. Nurses in charge of clinical units in the hospital work together with other healthcare professionals as a team to coordinate and facilitate patients' healthcare needs. How nurses and the healthcare team function interdependently for coordination of patient care is unpredictable and vary contextually depending on the prevailing organizational mechanisms and relational coordination. Relational coordination is a mutually reinforcing process of communicating and relating for task integration. Relationships of shared goals, shared knowledge and

* *Corresponding author*
Email: aansahofei@ug.edu.gh

share
Send us an email: info@hsijournal.org
https://www.hsijournal.org

mutual respect promote frequent, timely, accurate, problem-solving communication, and vice versa [3]. Relational coordination focuses on the relationships of work teams and the interdependent work they perform to complete tasks. Strong relationships enable staff to embrace connections with each other to effectively coordinate work processes [4-8].

Care coordination involving teamwork, effective leadership, good interpersonal relationships, proper documentation, conducive environment and effective communication among nurses is essential for prompt and accurate health care delivery [9,10]. However, these attributes are lacking among nurses in most regional hospitals in Ghana, including the Greater Accra Regional Hospital (GARH), partly due to the increasing number of patients' attendance [11]. Despite these, very few studies have been conducted to address this challenging issue among the health workforce particularly, nurses. Again, the few studies conducted on the subject so far focused on patients' experiences about care coordination rather than factors that influence care coordination among staff in the unit. Furthermore, maximising unit goals has always been a struggle for nurse managers as many health professionals converge in the unit to render care to patients. Anecdotally, there have been instances where miscommunication has resulted in squabbling among nurses or between nurses and other health professionals during patient care. To facilitate quality care, nurses must engage in effective care coordination to ensure that health professionals particularly, nurses are responsive to patients' needs. Hospitals need to strengthen organisational mechanisms and relational coordination to promote care coordination among nurses and other health professionals in the unit. Adequate research to augment information on care coordination among health staff could contribute to resolving such issues. The literature illustrates that care coordination among nurses has been less investigated, particularly, the health system of low-middle income countries. Drawing inspiration from the few existing studies in this context, we examine the relationship of organizational mechanisms and relational coordination on the outcome of care coordination among nurses in 8 units.

Theoretical framework

The study adopted the model developed by Van Houdt et al. [1] on factors that influence the coordination of healthcare activities among nurses towards patients (Supplementary Figure 1). According to this model, the main factors including external factors, patient characteristics, organizational mechanisms, and relational coordination work in synergy to influence care coordination among nurses. However, Van Houdt et al. [1] only described the constructs of the model but did not test its applicability on the outcome of care coordination among nurses. This research gap prompted the adaption of the theoretical framework for this study. This paper considered two factors of the model that is, organizational mechanisms, relational condition, and its relationship with the outcome of care coordination. According to the framework, delivery of quality healthcare services depends on the adequate management of organizational mechanisms (task characteristics, organizational structure, knowledge and information technology, administrative operational processes, and cultural factors) [12-19]. These factors are invaluable in promoting care coordination [1,20-29]. The organizational mechanism is significantly influenced by external factors (social security system, current legislation, existing resources, and positive media coverage) to facilitate the delivery of effective patient care [30-39]. Hence, depending on the nature of these factors, nurses may build relational coordination with each other to determine the outcome of care coordination [38,40-46]. Organizational mechanisms directly influence relational coordination which determines the outcome of care coordination. Relational coordination such as nurses' roles, quality of relationships, exchange of information and goals may influence the outcomes of care coordination either positively or negatively [28,33-37,41-46].

MATERIALS AND METHODS

Study design and setting

A cross-sectional survey [47] was used to examine the relationship of organizational mechanisms and relational coordination on the outcome of care coordination among nurses in the unit. This approach is used to gather information about individuals at a single point in time and can be justified from a theoretical perspective; since it allowed us to draw inferences about relationships between independent and dependent variables [48]. Frees stated that findings derived from the study are supported if they are based on theory, logic, and/or intuition [49]. Since this study was developed upon the theory of factors that influence care coordination among nurses by Van Houdt et al. [1], findings are adequately supported. Thus, the clear theoretical assumptions provided by the theory about a relationship between organizational mechanisms, relational coordination and care coordination outcome provided a good tool to test hypotheses. The study setting was GARH. It is the only secondary and referral health institution in Accra, which provides specialized care and diagnostic investigations that are not available at the district level. The hospital was chosen because it is a secondary facility with a variety of healthcare professionals that converge at the unit to render quality care to patients.

Sampling technique

The target population were all nurses working in GARH. We included all permanent professional or auxiliary nurses who have worked in the unit for at least three months. The sample size was calculated using Yamane [50] formula to be 238 and adjusted by 10% for non-response. The convenience sampling technique was used to select 262 nurses from the units [51]. The main reason for using this method was the availability of the respondents at the various units. A self-administered questionnaire was given to the 262 eligible nurses. Participants were informed about the purpose, risk and benefits of the study and were assured

of anonymity and confidentiality. Questionnaires were administered individually to nurses in the unit and completed questionnaires were kept by the nurse in charge of the unit. Questionnaires were either completed in the unit or taken home by participants. Completed questionnaires were later collected from the unit in-charges by the first author. In all, 258 questionnaires were retrieved representing a response rate of 98.5%. Data were collected from February to April 2018 after obtaining institutional consent from hospital administration. The questionnaire was made up of both closed and open-ended questions and divided into four sections: section A explored the demographic characteristics whereas the other sections examined organisational mechanisms, relational coordination and outcome of care coordination using a 5-point Likert scale. Face reliability was measured by pre-testing the questionnaire using 60 nurses from a Teaching hospital with similar characteristics as the study setting and after analysis, four questions were deleted, and six questions were edited. Questions were developed from the theoretical framework and psychometric analysis was done to check the individual internal consistency of the questions. The Cronbach's alpha for the different subsets of the questionnaire indicated good internal consistency: organizational mechanisms (0.915), relational coordination (0.938), and outcome of care coordination (0.961). Additional questions were designed to measure the level of care coordination in the unit. The scientific and ethics protocol of this study was approved by the Noguchi Memorial Institute for Medical Research Institutional Review Board (NMIMR-IRB) and the Ghana Health Service Ethical Review Committee (GHS-ERC).

Table 1: Socio-demographic characteristics of nurses

Gender	Frequency	Percentage
Female	154	67.25%
Male	75	32.75%
Total	229*	100%
Age group		
21 – 25	59	26.46
26 – 30	105	47.09
31 – 35	33	14.80
36 – 40	9	4.04
41 – 45	7	3.14
46 – 50	10	4.48
Total	223*	100%
Designation		
SN/SM	90	39.30
SSN/SSM	43	18.78
NO/MO	39	17.03
SNO/SMO	15	6.55
PNO/PMO	3	1.31
EN	39	17.03
Total	229*	100%
Basic Qualification		
Certificate	56	24.78
Diploma	121	53.54
First Degree	49	21.68
Total	226*	100%
Unit		
Emergency	26	11.35
OPD	16	6.99
Children	29	12.66
Surgical	20	8.73
Medical	6	2.62
Maternity	28	12.28
Theatre	53	23.14
Specialized	51	22.27
Total	229*	100%

* Variable has missing values; SN/SM, staff nurse or midwife; SSN/SSM, senior staff nurse or midwife; NO/NMO, nurse or midwife officer; SNO/SMO, senior nurse or midwife officer; PNO/PMO, principal nursing or midwife officer; EN, enrolled nurse; OPD, outpatient department

Statistical analysis

The Statistical Package for Social Sciences (SPSS) version 24 was used to perform descriptive, Pearson correlation and multiple regression analyses. Participants' demographic characteristics were summarized and presented using frequencies and percentages. Similarly, organizational mechanisms, relational correlation and care coordination outcomes were analysed and presented using mean and standard deviations. Each of the factors was measured using a 5-point Likert scale. Scores of ≤ 2 indicated a low level, scores of 3 showed moderate level, and scores of ≥ 4 showed a high level. Pearson correlation analysis was performed to identify the relationship between variables whereas, regression analysis was done to determine the extent to which the factors predict the outcome of care coordination. We also aggregated the individual comments from the open-ended questions.

RESULTS

Table 1 shows socio-demographic characteristics of nurses (age, gender, category, designation, basic qualification, unit, number of years worked and unit workload). Out of 223 participants, 47.09% were between the ages of 26 - 30 years and most (39.30%) of the participants were staff nurses or midwives. The majority (53.54%) of the participants had diplomas whereas 21.68% of the participants had a first degree in nursing. Out of 229 participants, 23.14% worked in the theatre, and only 2.62% worked in the medical unit (Supplementary Table 1). The nurses had worked in their respective units for periods ranging between 3 months to 17 years. Table 2 shows the mean score for organizational mechanisms as 3.43. The results show that to some extent nurses were fairly trained on information technology [mean ± standard deviation (SD): 3.27 ± 0.93]; task characteristics influenced care coordination among nurses (mean ± SD: 3.79 ± 0.93); nurses' attitude towards patient fostered care coordination (mean ± SD: 3.47 ± 0.92); and organizational environment strongly provided clinical supervision (mean ± SD: 3.69 ± 0.84). Table 3 describes the perception of nurses about relational coordination in the units. The mean score for

relational coordination was 4. The results show that nurses were aware of their roles during the performance of tasks to a very large extent (mean ± SD: 4.33 ± 0.76); nurses showed mutual respect during discharge of duties (mean ± SD: 4.08 ± 0.92); good nurse-patient relationship strongly facilitated effective care planning (mean ± SD: 4.26 ± 0.73); and nurses welcomed other nurses' opinions during tasks performance (mean ± SD: 4.05 ± 0.98). Table 4 indicates that the mean for the outcome of care coordination was 4.08. The results show that good interpersonal skills were demonstrated with other staff and patients during care

Table 2: Organizational mechanisms that affect care coordination among nurses in the units

Organizational Mechanisms	Mean	Standard deviation
Task characteristics affect care coordination among nurses	3.79	0.93
The organizational structure promotes how nurses organize work	3.74	0.93
The facility provides adequate support for nurses to coordinate	3.49	1.14
Management frequently meets with nurses and listen to their complaints.	3.26	1.20
Nurses have adequate training that adequately prepared them to deliver care	3.65	1
Nurses are adequately trained on information technology	3.27	0.93
The hospital uses information technology system to facilitates coordination	3.17	1.05
Has the organizational mechanisms to ensure standardization of care processes?	3.13	0.94
Is there any policy and practices developed by healthcare managers?	3.19	0.99
Does nurses' attitudes toward patient foster care coordination?	3.47	0.92
There are always adequate nurses at post throughout all shifts	2.94	1.29
Time constraints of nurses affect delivery of quality care to patients	3.42	1.18
Increased workloads of nurses often lead to missed care	3.70	1.07
There is availability of systems to detect care needs to guide nurses	3.04	1.05
There is a system in place used for allocation of patients in the units	3.17	1.34
Staffing of nursing personnel is based on the high turnover of patients	3.19	1.12
Nursing credentialing increases feeling of emotional security and competency	3.62	1.11
The organizational environment strongly provides clinical supervision	3.69	0.84
Workshops are organized regularly for nursing personnel	3.86	1.02
Team meeting is a regular practice used to improve collaboration	3.96	1.15
Overall	3.43	

Table 3: Relational coordination among nurses in the unit

Relational Coordination	Mean	Standard deviation
Does relational coordination exist in the unit?	3.87	0.95
Nurses' roles are defined during task delivery in the unit.	3.92	0.84
Nurses are aware of their roles during the delivery of tasks.	4.33	0.76
Nurses sometimes cross boundaries due to the complexity of patient's condition	4.00	0.97
Nurses show mutual respect during discharge of duties.	4.08	0.92
Good nurse-patient relationship facilitates effective care planning	4.26	0.73
Nurses collaborate often to ensure quality delivery of care	4.17	0.68
Nurses work interdependently to execute complex tasks	4.03	0.79
Quality of relationship with patients and families reduces time - pressure	3.92	0.84
Quality of relationship maintained with patients foster strong bonding and trust	4.07	0.82
Task characteristics in the organization affect exchange of information	3.58	1.02
Nurses exchange ideas during performance of tasks	4.18	0.76
Nurses' welcome other nurses' opinions during tasks delivery	4.05	0.98
Nurses set goals and develop specific objectives for tasks to be accomplished	4.08	0.86
The nature of task characteristics enhanced sharing of common goals	4.01	0.78
Relational coordination is developed in a supportive environment	4.13	0.80
Nurse managers create and ensure group participation decision making	4.03	0.80
Nurse managers ensure fairness and equity in assigning tasks to nurses	3.79	0.89
Novice nurses are well orientated and supervised for easy integration	3.91	0.97
Equal opportunity is created for all nurses to upgrade themselves	3.56	1.18
Overall	4.00	

Table 4: Outcome of care coordination

Outcome of Care Coordination	Mean	Standard deviation
Nurses achieve satisfying and rewarding outcomes of care coordination when patients responded positively	4.25	0.85
Nurses' interaction with patients become patient-centred rather than professionally directed	3.70	1.05
Nurses' expertise abounds during delivery of care	3.97	0.84
Good interpersonal skills are demonstrated with other staff and patients during care coordination	4.21	0.71
Both nurses and patients demonstrate adequate knowledge about protocols and how systems work.	3.97	0.89
Nurses demonstrate their abilities to effect and implement change	4.15	0.82
Nurses use lobbying skills to access resources needed for delivery of quality care	4.03	1.10
Patients often demonstrate availability of support for self- management	3.83	0.94
Nurses play an advocacy role to ensure that patients receive best care	4.34	0.87
Nurses intensify patients' and family health education for empowerment.	4.31	0.76
Nurses coach and counsel patients and families frequently about their condition	4.17	0.82
Nurses take patients and family preferences into account before discharge.	4.13	0.92
Patients and their family demonstrate understanding of medication regimen	4.05	1.01
Patients show high motivation in making agreed lifestyle changes when they feel special.	3.93	0.96
Patients recover fast due to compliance and understanding of treatment regimen.	4.34	0.89
*Patients show fewer A&E visits and reduced length of hospital stay	3.89	1.03
Effective care coordination among nurses often lead to development of shared cultures.	4.05	0.87
Better healthcare outcomes because of care coordination among nurses which improves financial performance	4.04	0.91
Effective care coordination increases inter-agency cooperation	4.14	0.83
Effective care coordination reduces admissions due to greater dependency on community services.	4.12	0.90
Overall	4.08	

*A&E, accident and emergency centre

coordination to a large extent (mean ± SD: 4.21 ± 0.71); nurses demonstrated their abilities to affect and implement change during care coordination (mean ± SD: 4.15 ± 0.82); nurses agreed strongly that they played advocacy role to ensure patients received the best care (mean ± SD: 4.34 ± 0.87); and patients recover fast due to compliance and understanding of treatment regimen advice received from nurses (mean ± SD: 4.34 ± 0.89).

Rating of care coordination practice

Figure 1 shows that 39.13% of the nurses rated care coordination in the unit as very good, 34.82% rated it as good, 17.45% rated it as average, whereas 8.73% rated it as excellent.

Organizational mechanisms to strengthen the unit

Organizational mechanisms that nurses would prefer management for strengthening care coordination in the units included improved information and communication technology (ICT), provision of adequate nursing staff, improved communication skills, good interpersonal relationships, participatory decision making and regular in-service training especially, on quality assurance.

Nurses' perception on improving care coordination

Nurses' perceptions about how care coordination can be improved in the unit included staff motivation, training, granting of study leaves, provision of adequate resources, maintaining a good interpersonal relationship, effective communication skills and effective leadership.

Organizational mechanisms and care coordination

We tested the hypothesis that organizational mechanisms have a significant effect on care coordination in the unit. Table 5 shows that the hypothesis is fully supported since organizational mechanisms have a significant effect on the outcome of care coordination ($\beta = 0.447$, $p = 0.000$). We also tested the hypothesis that relational coordination has a significant effect on the outcome of care coordination in the

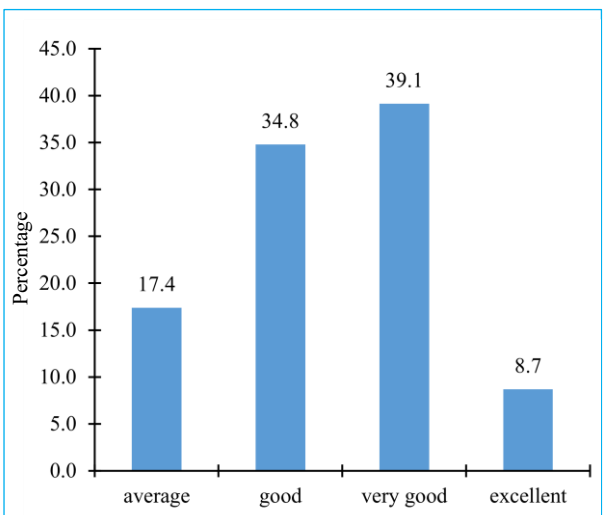


Figure 2 :Rating of care coordination practice among nurses in the unit

unit. Table 6 shows that the hypothesis is fully supported since the coefficients of relational coordination indicate a significant effect on the outcome of care coordination (β = 0.793, p = 0.000). In this study, we analyzed the relationship between factors influencing care coordination and the outcome of care coordination. Table 7 shows the correlation analysis between the independent variables (organizational mechanisms and relational coordination) and the dependent variable (outcome of care coordination), which reveals a significant positive correlation between organizational mechanisms (0.413), relational coordination (0.677) and outcome of care coordination.

Table 5:Effects of Organizational mechanisms on outcome of care coordination

Model		Unstandardized Coefficients		t	p value
		β	Std. error		
1	(Constant)	2.544	0.213	11.947	0.000*
	Organizational mechanisms	0.447	0.061	7.318	0.000*

*std. error, standard error

Table 6: Effects of Relational coordination on outcome of care coordination

Model		Unstandardized Coefficients		t	p value
		β	Std. error		
1	(Constant)	0.903	0.217	4.172	0.000*
	Relational coordination	0.793	0.054	14.812	0.000*

*std. error, standard error

Table 7: Pearson correlation Analysis of factors influencing care coordination and outcome of care coordination

	Outcome of Care Coordination	Organizational mechanisms	Relational Factors
Outcome of Care Coordination	1.000		
Organizational mechanisms	0.413*	1.000	
Relational Factors	0.677*	0.427	1.000

*Significant at $p < 0.05$

DISCUSSION

Organizations are designed to use groups and resources for the achievement of goals. Organizational mechanisms interact with all the organizational components to ensure appropriate functioning [8]. Participants acknowledged that task characteristics, training of nurses about the use of information technology, nurses' attitude towards patients and provision of clinical supervision are some organizational mechanisms significant to care coordination among nurses in the unit. The mean score for organizational mechanisms was above average, indicating a significant influence on the outcome of care coordination in the unit. These findings corroborate the work of Zawawi and Nasurdin [16] who asserted that task significance promotes care coordination. The study revealed that organizational structure promotes care coordination among nurses in the unit (mean ± SD: 3.74 ± 0.93). Although there is a division of labour in the units, the nurse managers ensure effective coordination among nurses by instilling discipline, unity of command and direction as well as the subordination of individual interest to promote the achievement of common goals [19]. Thus, care coordination prevails through team effort. The study indicated that the provision of adequate support for nurses to coordinate care is essential (mean ± SD: 3.49 ± 1.14). This finding supports the American Nurses Association [36] position statement that registered nurses need to be properly supported as an inter-professional team to enable them to play their role as care coordinators.

The study also affirmed the findings of Kieft et al. [52] which conceded that managerial support improves patients' experience of quality nursing care. Support from management, senior colleagues, and subordinates thus, upholds autonomy, competency, confidence, creativity, innovation, and job satisfaction. Again, the study confirmed that adequate training of nurses about the use of information technology (IT) aids care coordination (mean ± SD: 3.27 ± 0.93). Nurses indicated that manual documentation is still prevailing through all the units of the hospital are gradually becoming automated. Hence, nurses would appreciate management organizing training to equip them with adequate IT skills to enhance care coordination. This finding reinforces the work of Keenan et al. [53], who acknowledged variation in nurses' documentation and communication practices in the unit due to the absence of IT in coordinating activities.

The study showed that organizational mechanisms ensure standardization of care processes (mean ± SD: 3.13 ± 0.94). This finding supports Benzer et al.'s [15] work, which established that personal coordination impacted standardized coordination which enhanced the needs of patients and staff. Standardization in the delivery of healthcare ensures the safety and dependability of care. Nurses ensure standardization of care through routine, effective communication, proper documentation, and adherence to infection control measures. Standardization ensures order, routine, discipline among staff and facilitates

staff appraisals in the organization. Another key finding of the study was that nurses' attitude fosters care coordination (mean ± SD: 3.47 ± 0.92). Previous studies have discussed how staff especially, nurses' attitudes have positively or negatively impacted the outcome of patients' care [23,33]. Nurses who have a positive attitude towards other nurses, other health staff, patients, and their families, greatly impact the outcome of care delivered. Similarly, the negative attitudes of nurses often creates confusion and neglect of responsibilities leading to poor health outcomes [33]. In this study, a positive relationship existed between organizational mechanisms and the outcome of care coordination. This finding supports the study by Camicia et al. [39] who indicated that organizational mechanisms enhance utilization and cost reduction, higher quality of care and improved clinical outcomes.

Relational coordination among nurses enhances the quality and outcome of care rendered to patients in the unit. The findings revealed high relational coordination among nurses in the unit (mean = 4.00). This finding is consistent with the study of Havens et al. [21] who posited that there is significant high relational coordination between nurses practising within the unit than between nurses in different units. Nurses working in the unit tend to develop good interpersonal relationships and teamwork to promote care coordination. The study further identified that the presence of relational coordination in the unit promotes nurses' awareness of their roles during the performance of tasks (mean ± SD: 4.33 ± 0.76). This finding concurs with Lapeña-Moñux et al. [36] who strongly advocated for nurses active participation in designing and implementation care coordination systems within health institutions. The nurse manager ensures that roles are clearly defined, and every nurse is aware of her role to contribute meaningfully to group efforts. This promotes teamwork and belongingness among nurses to coordinate care more effectively in the unit. There are boundaries to healthcare professionals' roles. The study indicated that nurses sometimes cross boundaries due to the complexity of patients' conditions (mean ± SD: 4.00 ± 0.97). Previous studies [21, 54] however, reported about lack of collaboration between nurses and physicians due to disputed boundaries and power differences. Nursing roles involve a lot of activities and collaboration with other health team members. Applying effective communication skills such as effective listening, responsiveness, and professionalism during interaction with others would presumably minimize these power differences.

The study revealed that mutual respect among nurses during discharge of duties (mean ± SD: 4.08 ± 0.92) promote effective care coordination practice. This finding is consistent with Havens et al. [21] who affirmed that mutual respect among health professionals promotes care coordination. When nurses respect the work of other healthcare staff, it encourages the active participation of all team members, knowing that their contributions are valued. Mutual respect among nurses promotes a positive workplace climate, quality care, competency, commitment, confidence, and growth. Kieft et al. [52] also affirmed that mutual respect is demonstrated by knowledge and expertise. Another significant finding was about a good nurse-patient relationship which promotes data collection and effective care planning (mean ± sD: 4.26 ± 0.73). Patients often confide in nurses who maintained a good relationship with them. This healthy relationship creates the opportunity for nurses to gather adequate and relevant health information from patients to make the right decisions concerning patients' care [23]. A good nurse-patient relationship creates a therapeutic environment that fosters care coordination.

Additionally, the study showed that nurses welcome other nurses' opinions during tasks performed in a supportive environment where relational coordination exists to facilitate care coordination (mean ± SD: 4.05 ± 0.98). The work of nurses is both independent and dependent, encouraging teamwork and interdependence with other professionals. Opinions of experienced nurses in times of complex situations are very relevant to the effective execution of tasks. Novice nurses gradually gain experience through continuous practice in an environment where good relational coordination exists. According to the nurses, relational coordination in the unit is very good (82.62%). This finding is consistent with Havens et al. [21], who found that relational coordination was higher among nurses in the same unit than in different units. Teamwork among nurses aided by effective communication and good interpersonal relationships help nurses to achieve quality and efficient outcomes [22]. Furthermore, the outcome of care coordination is very essential to all stakeholders especially, institutions, patients, and families. Camicia et al. [39] indicated that care coordination practice is associated with utilization and cost reduction, high-quality care and improvement in clinical outcomes. However, Lyles et al. [55] suggested that areas such as communication, healthcare capacity, staff knowledge, and family education should be improved to achieve better outcomes of care coordination [2]. Generally, the study revealed that the outcome of care coordination in the unit was very good (mean = 4.08). This could be attributed to teamwork, strong interpersonal relationship, and mutual respect among nurses in the unit.

The findings revealed that nurses achieve a satisfying and rewarding outcomes of care coordination when patients respond positively to care (mean ± sD: 4.25 ± 0.85). This finding supports the work of Camicia et al. [39] who indicated that case management interventions help to improve depressive outcomes. Nurses drive teams, organize functions, distribute resources, interact with patients and families, and implement interventions that are within their jurisdictions to achieve optimal outcomes. Additionally, the study showed that nurses' interaction with patients become patient-centred rather than professionally directed (mean ± SD: 3.70 ± 1.05). This finding is consistent with the observations from Kieft et al. [55]. Patient care complexity demands well-trained nurses to create a safe and therapeutic environment for better

outcomes of care. Staff working in a unit may have different goals, however, nurse managers should strive to align differences in attitude, strength, skill, or interests towards the achievement of organizational goals particularly, enhanced patient outcomes. The study revealed that nurses' expertise abounds during the delivery of care which improves the outcome of care coordination (mean ± SD: 3.97 ± 0.84). This finding is consistent with Kieft et al. [52], who established that a healthy work environment nurtures a climate for the provision of excellent nursing care. Nurses showed high commitment to the implementation of changes and policies when adequately engaged in development (mean ± SD: 4.15 ± 0.82). This finding corroborates with the work of Apker et al. [35] and Romanow [22] who indicated that nurses function in an atmosphere where there is shared knowledge, goals and mutual respect through the demonstration of effective communication skills.

Nurses' handover at the end of shift by communicating patients' management such as a change in medication, procedures and diagnostic investigations proposed, undertaken, or to be accomplished by the upcoming team. Patients' outcomes are, therefore, compromised when interpersonal skills are lacking [55]. The finding indicated that nurses demonstrate abilities to impact and implement change for the improvement of patients' outcomes. This finding is consistent with Haas et al. [56] who asserted that nurses are great resources to the health team and patients in effecting and implementing change. Healthcare resources are very essential for patient care, yet, always scarce in the units where multi-disciplinary team members compete for them. The study indicated that nurses use lobbying skills to access resources needed for the delivery of quality patient care (Mean ± SD: 4.03 ± 1.10). This finding supports previous studies that established lobbying as an effective way of influencing legislation to improve the outcome of care [25,557-59]. Furthermore, the outcome of care coordination enables patients to demonstrate the availability of support needed for self-management (Mean ± SD: 3.83 ± 0.94). Nurses use lobbying and advocacy to liaise patients with agencies such as social welfare, occupational therapy centres and non-governmental organization, where patients can access support for independence and integration into the community.

The advocacy role of the nurse includes patient education, preparation of patient towards discharge, addressing medication issues and informing patients about whom to engage in emergencies [33]. Nurses also advocate and display good communication skills among team members to promote a caring and supportive working environment [54] which according to nurses hastens patients' recovery due to compliance and understanding of treatment regimen. Patients who receive adequate information about their conditions are more empowered for self-management which prevents complications. This reduces the length of stay of patients in the unit and improves patients' outcomes. The study indicated a very good mean score of 4.31. This finding is consistent with the study of Lynggaard et al. [59] who argued that patient education in cardiac rehabilitation is recommendable although, no strong evidence exists. Additionally, the findings indicated that coaching and counselling of patients and families about their conditions improve the outcome of care coordination (mean ± SD: 4.17 ± 0.82). Patients and families are often worried about how they will manage situations at home after discharge.

Nurses counsel patients and families on the importance of medication regimen, diet, exercise, follow-ups and whom to contact to allay fears. This finding is consistent with Haas and Swan [56], who found that coaching and counselling reduce emergency department visits and improve patients' abilities to cope with interventions. Patient-centred care encourages nurses to take patient and family preferences into account when planning care and discharge. Nurses consider patient's choices and available resources that can help improve the patients' outcome of care. The resultant effect is the reduction of accident and emergency visits which improve the quality-of-care delivery. This finding also corroborates with Renholm et al. [60], who indicated that the wish of patients to meet operating surgeon demands was important in continuity of care. Effectiveness of care coordination among nurses leads to the development of shared cultures. Nurses' attitudes towards work and patients, norms and beliefs influence the outcome of care coordination. When nurses show mutual respect, communicate effectively, and maintain good interpersonal relationships, it enhances harmony in the unit and promotes quality outcomes of patient care. The finding revealed a good outcome of care coordination with shared cultures in the unit (mean ± SD: 4.05 ± 0.87). The finding supports the observations from Brinkschroder [61] who indicated that organizational culture can be shaped through communication. Improved financial performance has been associated with better healthcare outcomes. The study indicated a good outcome of care coordination in the unit results in improved financial performance (mean ± SD: 4.04 ± 0,91). With better healthcare outcomes, scarce resources would be managed prudently to improve healthcare services and motivate staff. With the growing complexity of patient care today, inter-agency collaboration and cooperation are paramount to care coordination.

Effective care coordination increases inter-agency cooperation which reduces admissions due to greater dependency on community services. The findings revealed that effective care coordination increases inter-agency cooperation (mean ± SD: 4.14 ± 0.83). These findings are consistent with previous studies [44,62] that conceded inter-agency collaboration and cooperation foster care coordination which leads to better outcomes. Generally, nurses' satisfaction with care coordination at the unit level was good (82.6%) but can be enhanced further by improvement of ICT, adequate staffing, effective communication skills, training, and effective leadership. When institutions invest in nurses through the provision of adequate training, empowerment, adequate motivation, and a positive workplace climate, the nurses become more competent, confident, and committed to enabling effective

care coordination. Factors that influence care coordination among nurses are enormous, however, very few studies have been conducted in Ghana and sub-Saharan Africa to address these challenging situations. The study found several implications for nursing education and practice. Nurses must be updated about the importance of care coordination practice, good interpersonal relationship, and effective leadership. Additionally, the study revealed that each of the predictive factors such as organizational mechanisms and relational coordination had a positive influence on the outcome of care coordination. Hence, factors that influence care coordination among nurses such as inadequate resources and quality relationships need to be properly addressed by nurse managers in the units to promote effective care coordination among nurses.

Conclusion

The role of nurses in the unit is crucial in ensuring positive outcomes. Organizational mechanisms and relational coordination influence positively the outcome of care coordination. Thus, nurses as custodians of the unit should be endowed with good interpersonal relationships, effective communication, and adequate training in ICT. Again, work in the unit should be standardized, the structure of nurses clearly outlined, and nurses empowered to participate in decision making in the unit. This would enable a positive workplace climate for efficient organizational mechanisms and good relational coordination that will promote the effective outcome of care coordination.

DECLARATIONS

Ethical considerations

The scientific and ethics protocol of this study was approved by the Noguchi Memorial Institute for Medical Research Institutional Review Board (NMIMR-IRB): NMIMR-IRB CPN 045/17-18; and the Ghana Health Service Ethical Review Committee (GHS-ERC): GHS-ERC: 018/01/18.

Consent to publish

Both authors agreed to the content of the final paper.

Funding

None

Competing Interests

No potential conflict of interest was reported by the authors.

Author contributions

STF drafted the manuscript from her MPhil thesis. AMAO edited and structured the manuscript.

Acknowledgements

We acknowledge the nurses and management of the GARH for their participation in the study.

Availability of data

The dataset used and analyzed for the current study is available from the corresponding author upon a reasonable request.

REFERENCES

1. Van Houdt S, Heyrman J, Vanhaecht K, Sermeus W, De Lepeleire J (2013) An in-depth analysis of theoretical frameworks for the study of care coordination. Int J Integr Care 13:1–8 . https://doi.org/10.5334/ijic.1068
2. Ehrlich C, Kendal E, John W (2013) How does care coordination provided by nurses 'fit' within the organizational processes and professional relationships in the general practice context? Collegian 20(3):127-135
3. Relational Coordination Collaborative. Improving organizational performance through communication and relationships. https://relationalcoordination.org/. Accessed 18 Oct 2021
4. WHO Regional Office for Europe (2011) Modern health care delivery systems, care coordination and the role of hospitals. www.euro.who.int. Accessed 18 Oct 2021
5. Zema C (2012) Understanding the Factors that Affect Care Coordination. https://www.cahps.ahrq.gov/News-and-Events/Podcasts.aspx. Accessed 18 Oct 2021
6. Cropley S, Sanders ED (2013) Care coordination and the essential role of the nurse. Creat Nurs 19:189–194 . https://doi.org/10.1891/1078-4535.19.4.189
7. Mosadeghrad AM (2014) Factors influencing healthcare service quality. Int J Heal Policy Manag 3:77–89 . https://doi.org/10.15171/ijhpm.2014.65
8. Tran Q, Tian Y, Tran Q, Tian Y (2013) Organizational Structure: Influencing Factors and Impact on a Firm. Am J Ind Bus Manag 3:229–236. https://doi.org/10.4236/AJIBM.2013.32028
9. Acquah, C., & Frimpong, S. How Coordination of Activities are carried out among Nurses and other Health Professionals in the Hospital (unpublished work). 2013.
10. Gittell JH (2002) Coordinating mechanisms in care provider groups: Relational coordination as a mediator and input uncertainty as a moderator of performance effects. Manage Sci 48:1408–1426 . https://doi.org/10.1287/mnsc.48.11.1408.268.
11. Gajate-Garrido, G. & Owusua, R. (2013). The National Health Insurance Scheme in Ghana: Implementation Challenges and proposed Solutions. Development Strategy and Governance Division. International Food Policy Research Institute (IFPRI). Discussion Paper 01309, December.
12. Hofmarcher MM, Oxley H, Rusticelli E (2007) Improved health system performance through better care coordination. OECD Pap 7:1–85
13. Jean, M. Care Coordination Healing Hands Is Goals and Benefits of Care Coordination Ongoing Challenges for Care Coordination. National Health Care for the Homeless Council National Health Care for the Homeless Council, 2016; 20(1), 1–8
14. Benzer JK, Cramer IE, Burgess JF, Mohr DC, Sullivan JL, Charns MP (2015) How personal and standardized coordination impact implementation of integrated care. BMC Health Serv Res 15:1–9 . https://doi.org/10.1186/s12913-015-1079-6
15. Ahmad Zawawi A, Nasurdin AM (2017) The impact of task characteristics on the performance of nursing teams. Int J Nurs Sci 4:285–290 . https://doi.org/10.1016/j.ijnss.2017.03.009

16. Cheng Y-R (2015) The outcomes and influencing factors of telecare managing patients with type 2 diabetes. Chinese Nurs Res 2:80–83 . https://doi.org/10.1016/j.cnre.2015.09.002

17. Douglas HE, Georgiou A, Tariq A, Prgomet M, Warland A, Armour P, Westbrook JI (2017) Implementing information and communication technology to support community aged care service integration: Lessons from an Australian aged care provider. Int J Integr Care 17:1–13. https://doi.org/10.5334/ijic.2437

18. Olum Y (2004) Modern management theories and practices. Makerere Univ Publ 0–24

19. Gittell JH, Suchmann AL (2013) An overview of relational coordination adapted from 'New Directions for Relational Coordination Theory.' In: Oxford Handb. Posit. Organ. Scholarsh.

20. Havens DS, Vasey J, Gittell JH, Lin WT (2010) Relational coordination among nurses and other providers: Impact on the quality of patient care. J Nurs Manag 18:926–937 . https://doi.org/10.1111/j.1365-2834.2010.01138.x

21. Romanow DS (2013) The Impact of IT-Enabled and Team Relational Coordination on Patient Satisfaction. PhD Thesis. Center for Process Innovation, Georgia State University

22. Nyarko-Mensah O (2013) Understanding the Nurse-Patient Interaction at Komfo Anokye Teaching Hospital: The Patient Perspective and Experience. MPhil Thesis, School of Nursing, University of Ghana

23. Zou P (2016) Relational Practice in Nursing: A Case Analysis. Nurs Heal Care 9–13. https://doi.org/10.33805/2573-3877.102

24. Ofei AM. (2015) Management practices of Nurse Managers in the Greater Accra region Ghana. PhD Thesis, School of Nursing, University of Ghana

25. Cucolo DF, Perroca MG (2015) Fatores intervenientes na produção do cuidado em enfermagem. ACTA Paul Enferm 28:120–124 . https://doi.org/10.1590/1982-0194201500021

26. Hardin L, Kilian A, Spykerman K (2017) Competing health care systems and complex patients: An inter-professional collaboration to improve outcomes and reduce health care costs. J Interprofessional Educ Pract 7:5–10 . https://doi.org/10.1016/j.xjep.2017.01.002

27. Stephenson, M., Campbell, J., Lisy, K., Chu, W.H., & Aromataris, E. Providing integrated care : experiences of healthcare providers. A rapid review for NSW Health, 2015; July, 1–62.

28. Bauer L, Bodenheimer T (2017) Expanded roles of registered nurses in primary care delivery of the future. Nurs Outlook 65:624–632 . https://doi.org/10.1016/j.outlook.2017.03.011

29. Christian BJ (2017) Translational Research – Effective Communication and Teaching Strategies for Improving the Quality of Pediatric Nursing Care for Hospitalized Children and Their Families. J Pediatr Nurs 34:90–93 . https://doi.org/10.1016/j.pedn.2017.04.001

30. Conway A, O'Donnell C, Yates P (2019) The Effectiveness of the Nurse Care Coordinator Role on Patient-Reported and Health Service Outcomes: A Systematic Review. Eval Heal Prof 42:263–296 . https://doi.org/10.1177/0163278717734610

31. Deas TM, Solomon MR (2012) Health information exchange: Foundation for better care. Gastrointest Endosc 76:163–168 . https://doi.org/10.1016/j.gie.2012.03.1406

32. Salmond SW, Echevarria M (2017) Healthcare Transformation and Changing Roles for Nursing. Orthop Nurs 36:12–25 . https://doi.org/10.1097/NOR.0000000000000308

33. Komatsu H, Yagasaki K (2014) The power of nursing: Guiding patients through a journey of uncertainty. Eur J Oncol Nurs 18:419–424. https://doi.org/10.1016/j.ejon.2014.03.006

34. Apker J, Propp KM, Zabava Ford WS, Hofmeister N (2006) Collaboration, Credibility, Compassion, and Coordination: Professional Nurse Communication Skill Sets in Health Care Team Interactions. J Prof Nurs 22:180–189. https://doi.org/10.1016/j.profnurs.2006.03.002

35. American Nurses Association (2012) Care Coordination and Registered Nurses' Essential Role. ANA Positional Statement

36. Lapeña-Moñux YR, Cibanal-Juan L, Pedraz-Marcos A, Macía-Soler ML (2014) Interpersonal relationships among hospital nurses and the use of communication skills. Texto Context - Enferm 23:555–562 . https://doi.org/10.1590/0104-07072014002010013

37. Serrano-Gemes G, Rich-Ruiz M (2017) Intensity of interprofessional collaboration among intensive care nurses at a tertiary hospital. Enfermería Intensiva (English ed) 28:48–56 . https://doi.org/10.1016/j.enfie.2016.10.002

38. Camicia, M. Chamberlain, B. Finnie, R. Nalle, M. Lindeke, L., et al. Reimbursement and scope of practice issues remains; the value of nursing care coordination. American Nurses Association, 2012; June, 0–23

39. Atherly A, Thorpe KE (2011) Analysis of the treatment effect of healthways' medicare health support phase 1 pilot on medicare costs. Popul Health Manag 14:S23–S28 . https://doi.org/10.1089/pop.2010.0059

40. Rutledge RI, Domino ME, Hillemeier MM, Wells R (2016) The effect of maternity care coordination services on utilization of postpartum contraceptive services. Contraception 94:541–547. https://doi.org/10.1016/j.contraception.2016.06.007

41. Gordon JB, Colby HH, Bartelt T, Jablonski D, Krauthoefer ML, Havens P (2007) A tertiary care-primary care partnership model for medically complex and fragile children and youth with special health care needs. Arch Pediatr Adolesc Med 161:937–944 . https://doi.org/10.1001/archpedi.161.10.937

42. Cohen E, Lacombe-Duncan A, Spalding K, MacInnis J, Nicholas D, Narayanan UG, Gordon M, Margolis I, Friedman JN (2012) Integrated complex care coordination for children with medical complexity: A mixed-methods evaluation of tertiary care-community collaboration. BMC Health Serv Res 12: . https://doi.org/10.1186/1472-6963-12-366

43. McDonald KM, Schultz E, Albin L, Pineda N, Lonhart J, Sundaram V, Davies S (2014) Care Coordination Atlas Version 4. In: Agency Healthc. Res. Qual. http://www.ahrq.gov/professionals/prevention-chronic-care/improve/coordination/atlas2014/index.html. Accessed 9 Oct 2021

44. Looman, W. S., Presler, E., Erickson, M. M., Garwick, A. E., Cady, R. G., Kelly, A. M., & Finkelstein, S. M. NIH Public Access, 2014; 27(4), 293–303. https://doi.org/10.1016/j.pedhc.2012.03.002.Care

45. Kuo DZ, McAllister JW, Rossignol L, Turchi RM, Stille CJ (2018) Care coordination for children with medical complexity: Whose care is it, anyway? Pediatrics 141:S224–S232 . https://doi.org/10.1542/peds.2017-1284G

46. Stockemer D (2019) Quantitative methods for social sciences: A practical introduction with examples in SPSS and Stata. Springer International Publishing. Switzerland

47. Behnke J, Baur N, Behnke N (2006) Empirische Methoden der Politikwissenschaft. Paderborn: Schöningh

48. Larsen MD (2006) Longitudinal and Panel Data: Analysis and Applications in the Social Sciences. J Am Stat Assoc 101:402–402 . https://doi.org/10.1198/jasa.2006.s88

49. Yamane T (1967) Statistics: An Introductory Analysis, 2nd Edition, New York: Harper and Row

50. Cozad J (1989) The Practice of Nursing Research: Conduct, Critique and Utilization. AORN J 49:1685. https://doi.org/10.1016/s0001-2092(07)66955-5

51. Kieft RAMM, De Brouwer BBJM, Francke AL, Delnoij DMJ (2014) How nurses and their work environment affect patient experiences of the quality of care: A qualitative study. BMC Health Serv Res 14:1–10. https://doi.org/10.1186/1472-6963-14-249

52. Keenan G, Yake E, Lopez KD, Tschannen D, Ford YB (2013) Challenges to nurses' efforts of retrieving, documenting, and communicating patient care information. J Am Med Informatics Assoc 20:245–251. https://doi.org/10.1136/amiajnl-2012-000894

53. Ehrlich C, Kendall E, St. John W (2013) How does care coordination provided by registered nurses "fit" within the organisational processes and professional relationships in the general practice context? Collegian 20:127–135. https://doi.org/10.1016/j.colegn.2012.04.006

54. Monterosso L, Piatt V, Krishnasamy M, Yates P, Berg M (2010) Evaluation of the Western Australian cancer nurse coordinator role. Asia. Pac. J. Clin. Oncol. 6:219

55. Haas SA, Swan BA (2014) Developing the value proposition for the role of the registered nurse in care coordination and transition management in ambulatory care settings. Nurs Econ 32:70–79

56. Mutisya MM (2013) Strategic Planning Practices Adopted By Dalsy Hillblom and Lynn (Dhl) Express. Masters Thesis. School of Business, University of Nairobi

57. Royal College of Nursing (2014) The nursing role in integrated care models. Reflecting on the United States' experience. https://www.rcn.org.uk/about-us/our-influencing-work/policy-briefings/POL-0214

58. Lynggaard V, Nielsen CV, Zwisler AD, Taylor RS, May O (2017) The patient education — Learning and Coping Strategies — improves adherence in cardiac rehabilitation (LC-REHAB): A randomised controlled trial. Int J Cardiol 236:65–70 . https://doi.org/10.1016/j.ijcard.2017.02.051

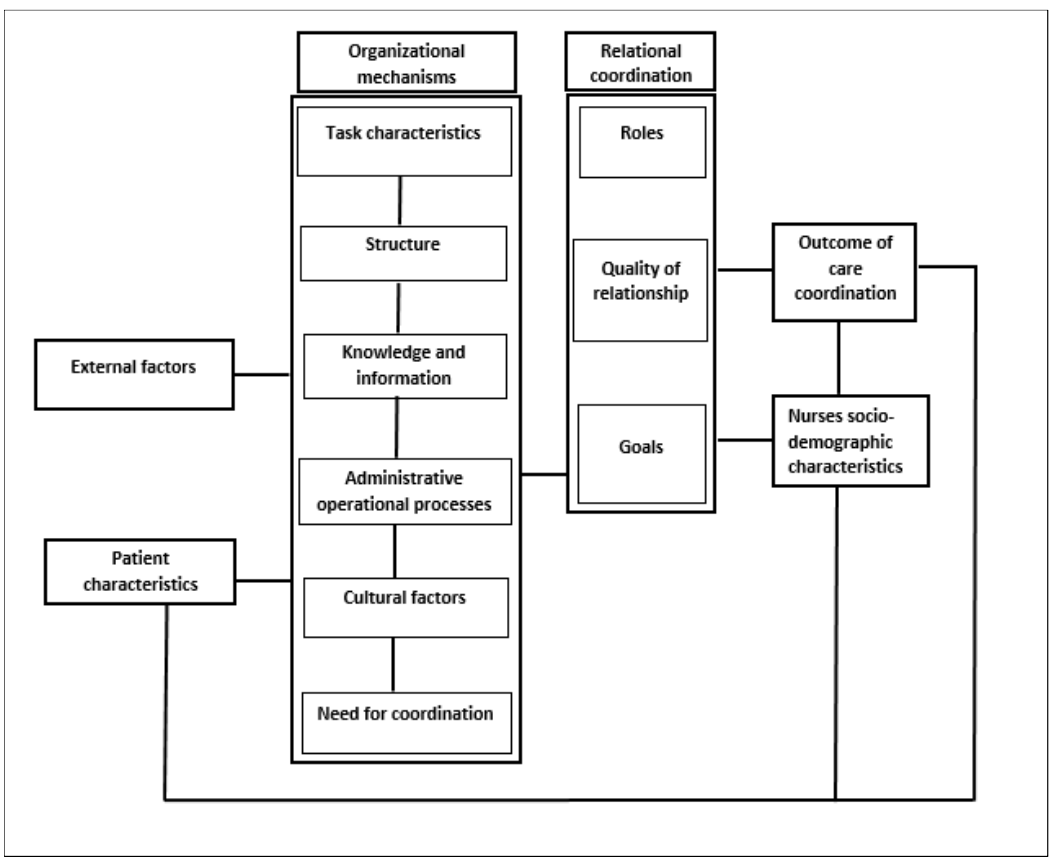
59. Renholm M, Suominen T, Puukka P, Leino-Kilpi H (2017) Nurses' Perceptions of Patient Care Continuity in Day Surgery. J Perianesthesia Nurs 32:609–618 . https://doi.org/10.1016/j.jopan.2015.08.013

60. Brinkschröder N (2014) Strategy Implementation: Key Factors, Challenges and Solutions. 4th IBA Bachelor Thesis Conference. University of Twente, The Netherlands

61. Robertson H (2011) Integration of health and social care: A review of literature and models Implications for Scotland. R Coll Nurs 1–42

Supplementary Table 1: Workload characteristics of Nurses

Unit	Workload				Total (%)
	Very heavy always (%)	Heavy always (%)	Heavy sometimes (%)	Not heavy (%)	
Emergency	16 (61.5)	8 (30.8)	2 (0.7)	0 (0.0)	26 (100.0)
OPD	0 (0.0)	3 (18.8)	13(81.2)	0 (0.0)	16(100.0)
Children	0 (0.0)	14 (48.3)	15 (51.7)	0 (0.0)	29 (100.0)
Surgical	4 (20.0)	6 (30.0)	10 (50.0)	0 (0.0)	20 (100.0)
Medical	0 (0.0)	3 (50.0)	3 (50.0)	0 (0.0)	6 (100.0)
Maternity	8 (28.6)	14 (50.0)	6 (21.4)	0 (0.0)	28 (100.0)
Theatre	26 (49.1)	20 (37.7)	7 (13.2)	0 (0.0)	53 (100.0)
Specialized Unit	0 (0.0)	11 (21.6)	40 (78.4)	0(0.0)	51(100.0)
Total	54 (23.6)	79 (34.5)	96 (41.9)	0 (0.0)	229 (100.0)



Supplementary Figure 1: Conceptual framework (Adapted from Van. Houdt, et al., 2013)

Thank you for publishing