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Assessment of Relational Coordination Ties Among Healthcare Professionals in Peshawar, KP, Pakistan.

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Relational Coordination,
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Interventions

ABSTRACT

The relational coordination (RC) construct explains coordination among individuals or groups from different functional areas to perform inter-related tasks. This research assesses the Relational Coordination (RC) level among healthcare professionals as they perform coordinated tasks of patient care. Healthcare professionals employed in the three largest public sector hospitals in Peshawar, Pakistan constitute the study population, from which sample was drawn using quota sampling procedure. Findings suggest that relational coordination ties were strongest among the functional groups of residents and nurses and doctors and residents. The RC ties among nurses and technicians and nurses and doctors were also found to be moderately strong. Relational coordination ties among functional groups of doctors and technologists, technologists and nurses, technicians and doctors, technicians and residents, administrators and doctors, and administrators and technologists were observed to be weak. However, the frail RC linkages were observed between administrators and nurses, residents and administrators, and administrators and technicians. These weakest ties require appropriate interventions on the part of the leaders and managers of healthcare service-providing facilities.

INTRODUCTION

Numerous complex jobs accomplished in contemporary organizations require a high level of coordination among individual employees or groups of employees (teams) from the same as well diverse functional areas. Because nearly no single employee working alone within an organization can achieve any meaningful goal, such coordination is required to fulfill organizational goals. Coordination is the process of two or more parties exchanging information formally or informally, using written or oral transactions, in order to integrate their individual contributions. Besides structured coordination, due to higher levels of uncertainty and time constraints, successful completion of various tasks in the healthcare sector requires an elevated level of unstructured coordination between the task performers. Relational Coordination (RC) is a conceptual construct that covers unstructured/informal collaborations and theorizes that the eminence of task participants' communication and relations affects the level of coordination and collaboration they achieve together (Gittell, 2002; Stephens & Lyddy, 2016).

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RC is demonstrated to be a valuable construct for comprehending the relational perspective of work process coordination (Gittell et al., 2020; Heredero, Haider, & Martinez, 2015). It is based on wide research (Carmeli & Gittell, 2009; Falatah & Conway, 2019; Gittell, 2001; Gittell, 2003; Pagell, et al., 2015; Stephens & Lyddy, 2016; Sánchez, Heredero, & Merodio, 2015) and is considered a powerful framework. It explains the accomplishment of inter-related tasks performed by workgroups (Kamatchi, Selwin, & Prasad, 2015).

Pakistan's government is attempting to provide an accessible, equitable, economical, and efficient healthcare system in a variety of ways (Ministry of National Health Services, Regulations, and Coordination, 2018). Despite an increase of 8% in healthy life expectancy globally, developing countries continue to have the worst overall healthcare services and results (World Health Organization (WHO), 2020). In the future years, the gap between available and required service provision for both inpatient and outpatient care is likely to widen (ADB, 2019). Despite certain advancements, the healthcare system of the country lacks administrative, organizational, and structural quality checks and controls (Khalid & Abbasi, 2018), preventing the anticipated effect on healthcare indices from being achieved (Anjum, 2018). As a result, Pakistan's healthcare system demands more efficiency in service delivery as well as considerable improvement efforts (Ali, 2018). Numerous issues and weaknesses have been identified in the Health Sector Strategy of Khyber Pakhtunkhwa (KP) province, including low quality and efficacy of care, limited accessibility, inadequate facility management, underfunding, inefficient and unequal resource distribution, and a personnel shortage (Directorate of Health (DOH), 2017). Because it is the core building block, the healthcare sector's quality and efficiency outcomes are largely reliant on good coordination and communication of its personnel (World Health Organization (WHO), 2010).

In healthcare, RC between workers is favorably related to outcomes of excellence and efficiency (Albertsen et al., 2014; Gittell et al., 2020) and with patients' satisfaction (McDermott, Conway, Cafferkey, Bosak, & Flood, 2019) and well-being (Cramm & Nieboer, 2012). Furthermore, cross-functional work centered on teamwork, cooperation, and collaboration is linked to healthcare workers' well-being (Martinussen, Kaiser, Adolfsen, Patras, & Richardsen, 2017) as well. In multi-specialty in emerging economy relational coordination is found to moderate the relationship amongst high-performance work systems and effectivity and efficiency outcomes (Thirupathi, Roy, Narayanamurthy, Palaniappan, & Subramanian, 2021). In healthcare environments, where professional processes are fraught with unpredictability, interconnectedness, and deadlines, the Relational Coordination Theory (RCT) can be effectually generalized (Gittell, 2003). Over the last few decades, there are increasing calls for enhancing coordination and communication among healthcare professionals around the globe. However, there is limited research with regards to the assessment of interdependencies and coordination amongst healthcare professionals in developing countries, particularly Pakistan. Therefore, this research endeavored to evaluate the extent of RC amongst groups of healthcare employees across different functional areas (Doctors, Nurses, Residents, Technicians/ Paramedics, Technologists, and Administrators). The specific research objective was to assess both the within and between workgroups relational coordination scores for professionals working in Peshawar in the healthcare sector and to identify the strong and weak relational ties.

LITERATURE REVIEW

Relational Coordination

Introducing relational coordination theory, Gittell (2003) offered an insight that in essence expanded beyond the employees' skills, motivation level, and commitment as determinants of quality outcomes. By establishing the theory of Relational Coordination, the scholar acknowledged connections among employees as an additional underlying mechanism determining organizational performance. The theory recognizes the communal solidification procedure of interaction amid communication and

relationships targeted at integrating tasks. The theory conjectures that the organizational efficiency and excellence outcomes are affected by RC, particularly when the tasks are interdependent, the situation or inputs are uncertain and there are time constraints. Over the years of research, relational coordination is positively linked with diversified results, including workers' outcomes, efficiency, and excellence (Gittell & Logan, 2015). Gittell (2002) defined relational coordination as "a process of mutually reinforcing communicating and relating among workers to integrate the coordinated tasks". Relational coordination, according to Siddique & Yunis (2018), is a nascent notion for identifying the relational subtleties of coordinated work and represents the amalgamation of an organization's responsibilities and tasks to achieve specified and inferred goals. The relational dimension and the communication dimension are two broad dimensions of RC. Frequency, timeliness, correctness, and the problem-solving quality of communication are four sub-dimensions of the communication dimension that reinforce the three relational dimensions of shared knowledge, shared goals, and mutual respect. (Gittell, 2002, 2006). RC is a valuable concept for comprehending the relational standpoint of coordinated operations (Gittell et al., 2020; Heredero et al., 2015). RC theory was established in an airline (Gittell, 2001) and has since been evaluated in manufacturing (Medlin, Aurifeille, & Quester, 2005; Pagell et al., 2015), banking (Siddique & Yunis, 2018), self-managing teams (Stephens & Lyddy, 2016), education sector (Sánchez et al., 2015), electronics, software, and financial sectors (Carmeli & Gittell, 2009) and several healthcare institutions. Strengthening relational coordination among professionals responsible for the performance of different functions within a work process can result in both quality and efficiency outcomes (Bolton, Logan & Gittell, 2021).

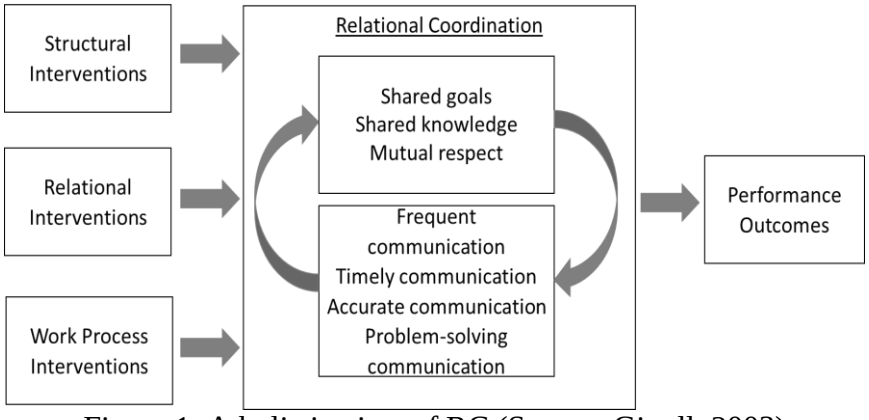

Figure 1: A holistic view of RC (Source: Gittell, 2003)

Relational Dimensions of RC

Shared knowledge among workers, shared goals among them and mutual respect constitute the relational dimensions of relational coordination. These are task-based relationships (rather than individual ties), and they are defined as links between work roles rather than persons. Employees can supply products or services that best meet consumer needs as a result of these ties (Coffey, 2015). These links allow workers to make evocative connections across functional domains, allowing them to cooperate "on the fly" and so improve their capacity to improvise as needed.

Communication Dimensions of RC

Timely, problem-solving, accurate, and frequent communication is strengthened by the three constituent relational aspects of relational coordination, which strengthen the communication dimensions. Frequent communication leads to familiarity as a consequence of repeated interactions, allowing for the development of excellent connections (Gittell, 2012). Communication accuracy is also

necessary for effective job collaboration. According to Justice et al., (2016), the correctness of team communication is determined by the team's agreement on the manner and regularity of communication. Imprecise data will either cause a mistake or cause an interruption (Chan, Purcell, & Power, 2016; Gittell, 2012) since the job being done might be halted to obtain more precise data. For coordination of exceedingly inter-related work, the communication timing is also critical, besides accuracy and frequency. Delayed communication may negatively affect quality and efficiency (Gittell, 2012). Timely communication is a critical component in making well-informed decisions (Tulsky et al., 2017). Because of the interdependencies of the tasks, difficulties that require cooperative problem resolution frequently develop. As a result, according to Gittell (2012), task performers must participate in problem-solving dialogue rather than criticizing one another.

Relational Coordination in Healthcare

In the health sector, successful inter-workgroup cooperation is extremely reliant on professional collaboration (Sinclair, Lingard, & Mohabeer, 2009). Inter-professional teams that work well have an influence on providing continuous care (Momsen, Rasmussen, Nielsen, Iversen, & Lund, 2012). RC is associated with efficiency and quality effects for the healthcare institutions (Gittell, 2003; Gittell, 2011) and numerous favorable outcomes for the job performers in the healthcare sector (Gittell & Logan, 2017; Gittell et al., 2020). In healthcare contexts, relationship coordination is strongly linked to job satisfaction (Gittell, Weinberg, Pfefferle, & Bishop, 2008; Havens, Gittell, & Vasey, 2018). Nurses' quality of life and job satisfaction have been found to be improved by relational coordination (Gittell et al., 2008; Havens, Vasey, Gittell, & LIN, 2010; Havens et al., 2018). It is also linked to increased workplace participation and competency among employees (Albertsen et al., 2014). According to a recent study, RC is favorably related to excellent outcomes for hospital staff (McDermott et al., 2019). Relational coordination, according to Gittell et al. (2020) and Havens et al. (2018), leads to work engagement and job satisfaction while also reducing burnout. According to Thygeson et al. (2021), in healthcare, even a trifling intervention based on RC can result in a cataract of initiative, learning, and engagement among workgroups fostering organizational learning at different levels.

METHODS

Research Nature and Design

The goal of this research study was to look at the extent of Relational Coordination amongst healthcare providers. The study's nature is descriptive in this aspect. Since workgroups from several functional areas collaborate in healthcare settings to reach the ultimate aim of patient care. Using the relational coordination paradigm, this research attempted to analyze and pronounce the excellence of communication and relationships amid different clutches of professionals. The survey design was deemed acceptable for the current study since it was thought to be the most matched with the quantitative methods used. The design was non-experimental since no variable was manipulated. Furthermore, a cross-sectional temporal horizon was deemed acceptable because a list of all workers was not provided by the hospitals because of privacy concerns; nevertheless, cumulative numbers of professionals in each workgroup could be acquired. Because the research participants' identity information was not available, a longitudinal design could not be used.

Data Collection

A survey approach was employed to seek employees' responses involved in the performance of the coordinated activities. Following Gittell's (2012) recommended procedure, as the initial step for computation of relational coordination a principal work-process of "Patient Care" was chosen, in accordance with which the employees coordinating the tasks completed the survey. Secondly, the groups

of professionals involved in the successful performance of this work process were chosen. The six workgroups namely the doctors, nurses, technicians, residents, technologists, and administrators were chosen as a result of a few informational interviews and a review of the relevant research (Gittell et al., 2020; Gittell, 2012).

Population and Sample

The study's target population comprised healthcare professionals employed at Peshawar's three main public sector hospitals. The minimum needed sample size was determined to be 140, based on Hair et al. (2017) and Kline (2005) recommendations of at least 10–20 observations per item as an acceptable sample size. Nevertheless, bearing in mind the multi-dimensionality of the RC construct, the study being part of a larger study the board sample size of at least 450 cases was decided. Quota sampling technique (Saunders, Lewis & Thornhil, 2016) was employed to choose the sample from each workgroup. Quotas were determined by multiplying the needed sample size by the proportions of employees in each workgroup. The number of questionnaires distributed was 500 of which 456 were received back. Bearing in mind that relational coordination is calculated as average scores of the survey responses, some questionnaires were cast off due to incompletion and incorrectness, and 438 cases (response rate = 87%) were finally analyzed.

Measures

RC was evaluated via the RC Survey (Gittell, 2012) which consists of seven items that evaluate the four communicating dimensions and three relationship dimensions among workers as they coordinate the task. As per Gittell (2012) recommendation, the relational dimensions were scaled as 1 = not at all, to 5 = completely (for mutual respect and shared goals), and 1 = nothing, to 5 = everything (for shared knowledge) and the communication dimensions of RC were scaled as 1 = never to 5 = always.

Table 1: Sample demographics

Characteristics	Categories	Occurrence	%age
Gender of the respondents	Male	278	63.47
	Female	160	36.53
Age of the respondents (Years)	Up to 30	162	36.99
	Up to 40	192	43.84
	Up to 50	37	8.45
	Up to 60	38	8.68
	Above 60	1	0.23
	No-Response	8	1.83
Work Experience in Years	Up to 10	358	81.74
	Up to 20	48	10.96
	Up to 30	26	5.94
	Above 30	1	0.00
	No Response	5	0.01
Education level of the respondents	College education	15	3.42
	MBBS/BS (Bachelor degree)	388	88.58
	FCPS (Masters degree)	28	6.39
	M. Phil/MS	6	1.37
	Ph.D.	1	0.23
Functional Groups	Doctor	56	12.79
	Nurse	96	21.92

Resident	180	41.10
Technician	69	15.75
Technologist	24	5.48
Administrator	13	2.97

DATA ANALYSIS AND RESULTS

Data Analysis Procedures

To gain insight into the sample characteristics, descriptive statistics were first computed using SPSS version 25. The procedure highlighted by Gittell (2012) was then used to calculate Relational Coordination (RC) scores. For every participant, the relational coordination score was calculated by calculating a variable for each of the RC components and afterward calculating a total score. For group-wise comparison, a variable was calculated for each study participant–one for RC level with nurses, another for RC with doctors, and so on. Dependency Structure Matrix (Sosa, Eppinger, & Rowles, 2003) was then developed using these aggregated scores. A one-way ANOVA test was conducted to evaluate the significance of variations in RC between the workgroups.

Descriptive Statistics

Table 1 shows the demographics of the study participants and Table 2 presents descriptive statistics for the focal study variable.

Table 2: Descriptive Statistics

Variable	N	Minimum	Maximum	Mean		SD	Range	Variance
				Statistic	SE			
RC	438	1.45	4.71	3.49	0.65	3.26	0.42	0.42

Note: RC = Relational Coordination

With a lower value of 1.45 and the highest value of 4.71, the average value for relational coordination (3.49) was observed to be nearly identical to prior research findings. When looking at relational coordination and performance outcomes at nine hospitals, Gittell (2012) observed a mean score of 3.46, and Altalib et al. (2019) found a mean score of 3.79 when looking at relational coordination in a neurology context. Similarly, while studying RC for staff and patient outcomes in 11 clinics, Gittell et al. (2020) obtained a mean value ranging from 3.54 to 4.29.

Table 3: Level of RC among workgroups

Functional Groups	1	2	3	4	5	6
1-Doctors	**4.19**	4.38	3.97	3.23	3.12	3.02
2-Residents (TMOs, HOs)	3.73	**4.42**	4.11	3.12	3.01	2.68
3-Nurses	3.46	3.97	**4.33**	3.52	3.22	2.75
4-Technicians/ paramedics	2.97	3.31	3.71	**4.15**	3.54	2.94
5-Technologists	3.01	3.08	3.21	3.21	**4.10**	3.21
6-Administrators	2.23	2.24	2.19	2.29	2.30	**3.27**
Aggregate	**3.53**	**4.00**	**3.97**	**3.37**	**3.20**	**2.83**

Relational Coordination Within Workgroups

Table 3 presents the dependency structure matrix which expresses relational coordination scores

for employees within a certain group and relational coordination scores for between the functional groups. Within-functional groups relational coordination scores are highlighted in bold. According to Gittell (2012) for within-group RC scores that are less than 4 indicate week RC ties and RC scores greater than 4.5 indicate strong relational coordination ties. Within functions, the RC ties for Nurses (RC=4.33) and Residents (RC=4.42) were recorded to be stronger, whereas the RC ties for Technicians (RC=4.15), Doctors (RC=4.19), and Technologists (RC=4.10) were recorded to be moderately strong. However, relational ties for Administrators (RC=3.27) were recorded to be weak. Thus, within workgroups, the administrators had the lowest degree of RC. Figure 2 also visually depicts the patterns of relational coordinating linkages within and between functional groupings.

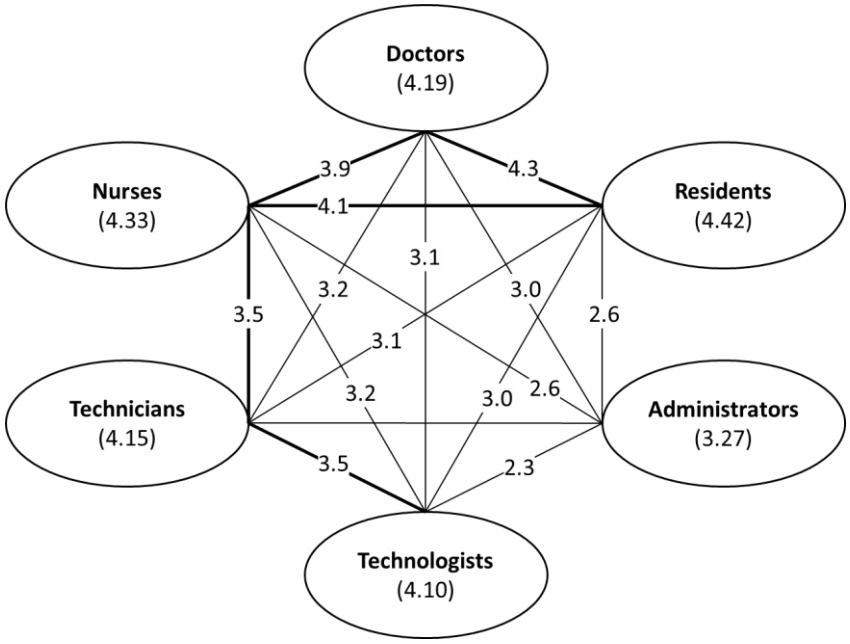

Figure 2: Graphical presentation of patterns of relational coordination

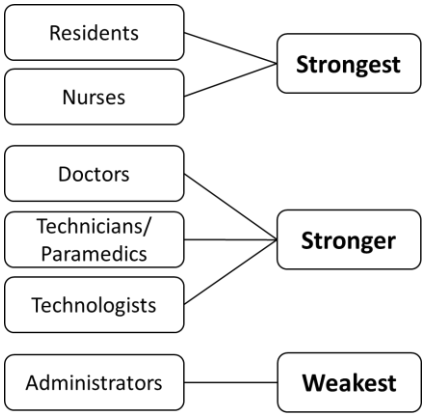

Figure 3: RC linkages within workgroups

Figure 3 also clearly summarizes the strengths of within functional groups RC ties.

Between Functional Groups Relational Coordination

Table 3 as well as Figure 2 show that RC scores amongst workgroups were found to be relatively

lesser than the within-workgroups RC scores. For between functions RC scores, lower than 3.5 indicate weak RC ties while scores more than 4 indicate RC ties to be strong (Gittell, 2012). For between workgroups RC was observed to be stronger between Residents and Nurses (4.10) and Doctors and Residents (4.39), relatively higher between Nurses and Technicians (3.53) and Doctors and Nurses (3.98), and weedier among Technologists and Doctors (3.13), Technicians and Doctors (3.24), Administrators and Doctors (3.03), Nurses and Technologists (3.24), Residents and Technicians (3.13), and Administrators and Technologists (3.20). However, RC links amid Nurses and Administrators (2.76), Administrators and Residents (2.69), and Administrators and Technicians (2.95). were found to be the weakest. These were found to be the three weakest ties that require the managers and leaders of tertiary care hospitals in Peshawar, Pakistan to implement appropriate interventions. Figure 4 graphically summarizes the strength of RC ties.

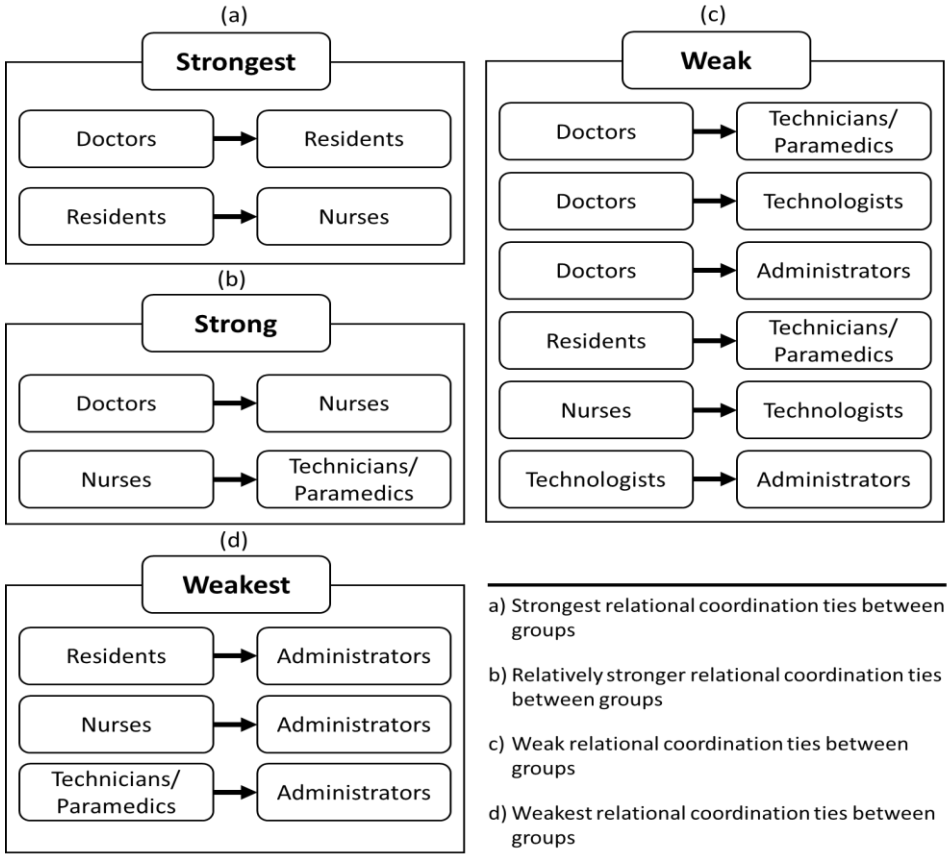

Figure 4: Between functional groups relational coordination ties

Table 4: Results of ANOVA (group differences)

	Sum of Squares	Degree of freedom	Mean Square	F	Sig.
Between the functional groups	17.86	5	3.57	9.21	0.000
Within the functional groups	167.51	432	0.38		
Total	185.38	437			

Table 4 presents the outcomes of a one-way ANOVA test that advocated that there were significant differences in RC scores among the functional groups of professionals.

DISCUSSION

For within workgroups RC scores for Nurses and Residents were observed to be the strongest whereas relational coordination scores for Technicians, Doctors, and Technologists were observed to be moderately higher. The functional group of Administrators had the lowest relational coordination score. For between workgroups Doctors and Residents and Residents and Nurses had the strongest relational coordination linkages, while Doctors and Nurses and Nurses and Technicians had moderately stronger ties. Technicians and Doctors, Administrators and Doctors, Doctors and Technologists, Technicians and Residents, Administrators Technologists, and Technologists and Nurses all had lower relational coordination scores. However, the level of RC was found to be weakest between Administrators and Nurses, Residents and Administrators, and Technicians and Administrators. RC linkages amongst functional groups were observed to be comparatively weedier than within the workgroups RC linkages. These study outcomes are in accordance with Gittell (2003), Gittell (2012), and Gittell et al. (2020). The six weak RC ties revealed were among the Doctors and Technologists, Doctors and Technicians, Residents and Technicians/Paramedics, Administrators and Doctors, Technologists and Administrators, and Nurses and Technologists. The relational coordination linkages between Nurses and Administrators, Technicians/Paramedics and Administrators, and Residents and Administrators were revealed to be the three weakest links. The detection of frail linkages necessitates work process, relational, and structural intercessions by the hospital administration because derisory relationships and deprived communication among as well as between coworkers relate to around two-thirds of mistakes in workplaces (Makary & Daniel, 2016; Thornberg, 2014). The identification of weak ties shows that healthcare management and businesses should focus more on improving relational coordination among employees. This may be accomplished by reorganizing work designs and holding frequent multidisciplinary team meetings to strengthen ties across functional groupings and allow for regular contact to improve relational coordination (Falatah & Conway, 2019). Joint staff training must be organized that provides the opportunity to get to know one another, as well as realize one other's restrictions, resources, and goals, in addition to learning (Gittell et al., 2020). According to previous research, structural adjustments can help managers and leaders improve relationship coordination. Adopting frameworks based on shared incentives, communal culpability, collective meetings, and common procedures are examples of such initiatives (Gittell & Logan, 2017; McDermott et al., 2019; Romanow et al., 2018). Relational interventions (including coaching and conversation) can also be used to improve the number of relational coordination links among professionals (Gittell, 2016; Perloff et al., 2017). To improve relational coordination, clarifying common goals across workgroups and overcoming power inequalities, as well as providing chances for peaceful engagement among employees (Gittell et al., 2020) can be used. Employing such RC-based interventions can result in systems thinking, aiding employees to understand work context and value multiple perspectives, and enhancing relationship-building and shared decision-making (Thygeson et al., 2021).

Implications of the Study

Within and across workgroups of healthcare professionals engaged in public sector hospitals in Peshawar, a significant number of inadequate relational coordination linkages were observed in the current study. Because relational coordination has been shown to benefit both people and organizations, the findings imply that healthcare managers and leaders should endeavor to improve RC across interrelated professional group members. Managers and leaders must thus guarantee that structural, relational, and work process interventions that improve relational coordination are implemented. According to previous research, structural adjustments can help managers and leaders improve relationship coordination. Structures based on communal incentives, collective procedures, mutual

meetings, joint information systems, and collective accountability are examples of such initiatives (Gittell & Logan, 2017; Romanow et al., 2018; McDermott et al., 2019). RCT advocates that these prospective intercessions must be considered as supporting the RC linkages by the policy makers, rather than as alternatives to them (Gittell & Douglass, 2012). Work process interventions that can be opted for, include reconfiguring performance management systems and job designs such that cross- functional workgroups frequently engage in interactions to resolve problems and issues at hand. Work process interventions also include conduction of frequent multidisciplinary team meetings (Falatah & Conway, 2019) and initiatives like organizing combined training programs for workers or providing other avenues so that they can understand one another's constraints, resources, and goals and get to know one another personally (Gittell et al., 2020). Relational interventions, such as thorough coaching and discourse, can also be used by managers and leaders to improve the level of RC. (Perloff et al., 2017). Besides, such interventions aids in preparedness for the devising and the implementation of structural interventions.

Limitations and Future Research Directions

This study, like any other scientific study, has limitations. For starters, one of the study's limitations was that the data was gathered using self-reported surveys. As a result, the survey participants were presumed to have a thorough comprehension of the survey topics as well as true and honest responses were assumed. There was no process in place to guarantee that either of the aforementioned conditions occurred, which might lead to reporter bias. In order to keep the survey brief, no measures to assess sloppy or inattentive replies were included. Second, despite the use of quota sampling, the samples chosen from inside the quota were not random. This might have led to self-selection bias, limiting the representativeness of the sample. As a result, the findings are limited in their generalizability due to the confined emphasis (Salkind, 2010). Finally, this study focused solely on professionals employed in Peshawar's three public sector hospitals. Even though the three hospitals in which the survey was undertaken are among the biggest in the Khyber Pakhtunkhwa province, and Peshawar is a huge city with some diversified geographic regions, urban and rural citizenry, diverse culture, and socioeconomic status, the generalizability of conclusions may be confined in many aspects.

The findings and limitations suggest some viable directions for future research. First, several research studies (e.g., Cramm & Nieboer, 2012; Warfield, Chiri, Leutz, & Timberlake, 2014) demonstrated that RC among healthcare providers and patients may also have a substantial impact on patient outcomes. Therefore, future RC research in healthcare should involve patients as a group. A seminal work in this area is Gittell et al (2020). Second, using experimental studies to study the influence of various RC interventions on relational coordination is a viable research direction. Third, the current study's focus process (patient care) was quite wide, encompassing all types of patient care. Future research studies might look into relational coordination in more focused patient care (neurological, child, intensive, surgery, outpatients care) and in diversified healthcare facilities (emergency response, clinics, and primary care centers, etc.).

CONCLUSION

Healthcare delivery is highly dependent on an elevated level of communication and coordination among healthcare professionals. RC explains coordination among individuals or groups from different functional areas to perform inter-related tasks. RCT may be effectively adapted to organizational settings as healthcare, where job processes are fraught with uncertainty, time restriction, and dependency (Gittell, 2003). This research study assessed the degree of RC between healthcare professionals from different functional areas as they perform coordinated tasks of patient care in the healthcare in Peshawar. RC ties were found to be strong within and between some functional groups while weak for some functional groups. The three weakest RC linkages were observed amongst technicians and administrators, residents

and administrators, and nurses and administrators. The weakest ties require the leaders and managers of healthcare service providers to contrivance interventions. Managers and executives of healthcare organizations should strive to improve RC across interrelated professional workgroups, according to the findings, through structural, relational, and work process interventions.

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