

COMMUNICATION PATTERNS BETWEEN RADIOLOGISTS AND REFERRING PHYSICIANS IN A TERTIARY PEDIATRIC CARE HOSPITAL: ENHANCING COLLABORATION FOR OPTIMAL PATIENT OUTCOMES

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ABSTRACT

BACKGROUND: Communication is an exchange of information between individuals or groups. Radiologists contribute to patient care through formal radiology reports and additional interactions. According to the literature, referring clinicians expressed satisfaction in communication with radiologists through digital access, which reduced in-person interactions, potentially affecting bilateral feedback, collaborative education, and professional growth.

OBJECTIVES: To assess the frequency of dynamics of communication between radiologists and referring physicians in a pediatric tertiary care hospital. **METHODS:** It is a prospective cross-sectional study, conducted on approximately 139 National Institute of Child Health (NICH) participants after obtaining approval from the ethical review committee. It included pediatric surgical and non-surgical doctors with varying years of experience, from various departments who were actively practising and regularly interacted with patient cases. Informed consent was obtained. The data was collected online via Google Forms and manually via printed surveys. Collected data were electronically compiled on an Excel sheet and analyzed on SPSS 26. **RESULTS:** The overall response indicated satisfaction with communication practices. A reportable statistical difference with a p-value of 0.014 was observed between surgical and non-surgical doctors, the former prioritized frequent and in-person communication with the radiologist. For communication satisfaction via radiology report, though 78(56.1%) respondent showed satisfaction, statistically significant difference of p-value 0.035 between surgical and non-surgical groups was also recorded. **CONCLUSIONS:** Effective radiologists/referring physicians communication is vital for quality health care. In-person discussion is significantly valuable for mutual understanding and trust building, leveraging electronic tools like phone call/SMS and hospital-based management strategies may further improve communication efficiency, especially in time-constrained situations.

Keywords: Communication pattern, radiologists, referring physicians.

Introduction

Communication is a process of exchanging information, ideas or thoughts between individuals or groups.¹ In

healthcare environments, information may be transmitted via traditional methods like in-person discussion,

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paper interaction or digital communication. Radiology reports, in which there is a detailed written interpretation of findings after a thorough evaluation of imaging studies, is a traditional method. Information exchange may occur via verbal communication like phone calls by referring doctors about emergency or urgent cases. The doctor may directly ask for clarification about complex cases and additional information. Electronic communication may occur by social media apps or email using the internet. Picture archiving and communication systems also allow the radiologist to share radiology images with the referring physicians to directly assess the case, potentially affecting patient outcomes. Video conferences or scheduled meetings also facilitate collaboration and in-depth discussion for a particular case. With advancing digital communication, medical inter-professional communication has also evolved rapidly.²

Digital access has eased communication between radiologists and referring physicians but has resulted decrease in face-to-face interaction, which potentially impacts professional development, collaborative education, and bilateral feedback.³

For quality healthcare, effective communication is essential between radiologists and referring physicians, particularly in a pediatric care hospital. Radiologists critically contribute to patient care via formal structured reports as well as informal encounters.⁴

The purpose of this study is to assess the frequency of communication dynamics between radiologists and referring doctors from different medical specialties including internal medicine, surgery, neurology, nephrology, neurosurgery, gastroenterology and endocrinology, in a pediatric tertiary care hospital. The secondary objective is to identify the potential barriers to appropriate communication. This will shed light on the importance of communication among radiologists and referring doctors and will contribute to improved healthcare delivery in the tertiary care setting.

Methodology

This is a prospective cross-sectional study which was conducted on 139 participants. After obtaining approval from the ethical review committee of the

National Institute of Child Health (NICH), the survey was distributed online as well as manually in different departments of NICH. Only those participants were considered who were medical professionals and actively practicing within the tertiary pediatric care hospital and having varying years of experience captured a broad range of perspectives. Exclusion criteria were set to exclude medical professionals not associated with the tertiary pediatric care hospital, referring physicians who have limited or no interaction with each other, participants unwilling or unable to provide informed consent, participants currently on leave or sabbatical, as they might not be actively involved in patient care discussions.

The questionnaire was designed, and it underwent content validity review by experts/ subject specialists. Feedback was gathered to ensure that the survey comprehensively covered the relevant dimensions of communication between radiologists and referring physicians. It was followed by pilot testing with a small number of participants to assess the clarity, relevance, and appropriateness of the questionnaire items. Feedback was obtained and considered which led to a refinement in question wording and structure to enhance the clarity and quality of the survey.

The survey was structured and consisted of 19 questions related to communication frequency, preferences, challenges, impact on patient outcomes, suggestions for improvement, clarity of reports, timeliness, collaboration, and overall satisfaction. These constructs were derived after a comprehensive review of existing literature and communication models in healthcare settings.

Demographic information including age, gender, speciality, and designation was also collected, names were optional to maintain their anonymity. The participants were informed about the voluntary nature of their participation, confidentiality measures, and the use of data solely for research purposes. Informed consent was taken before filling out the survey.

Google Forms were used to get the data online using what's app groups and surveys in printed paper form were also distributed in different departments of pediatric medicine, pediatric surgery, pediatric endocrinology, pediatric anesthesia, pediatric oncology, pediatric rehabilitation, tuberculosis (T.B) clinic, infectious disease, pediatric neurology, pediatric nephrology, pediatric psychiatry, pediatric emergency

pediatric gastroenterology, pulmonology, to get the maximum response. All the collected data were electronically compiled on an excel sheet and analyzed on SPSS 26.

Results

Out of 139 respondents, 68% were female and 32% were male. The demographic profile showed a varying range of age distribution. The majority was within the 31-35 years age group with 63 participants (65%), followed by the 26-30 age group constituting 45 individuals (32%). A smaller proportion ranging between 36-40 years consists of 26 individuals (19%). Only a minority was over the age of 40 years with 5 individuals (4%). (Chart 1)

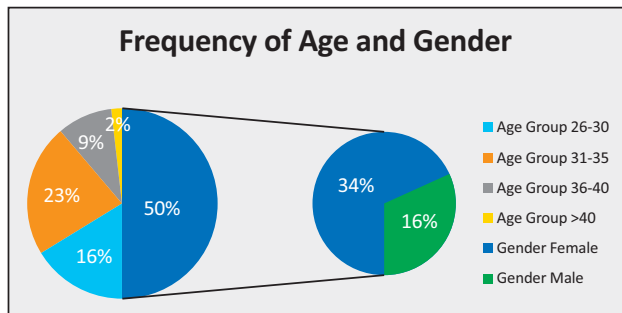


Chart 1:

Among all medical specialities, the highest participation from pediatric medicine constituting 53 participants (38%), followed by the pediatric surgery department consisting of 52 participants (37%). Seven (5%) respondents were from the oncology department. Few participants were from gastroenterology, neonatology, and nephrology. A modest number of

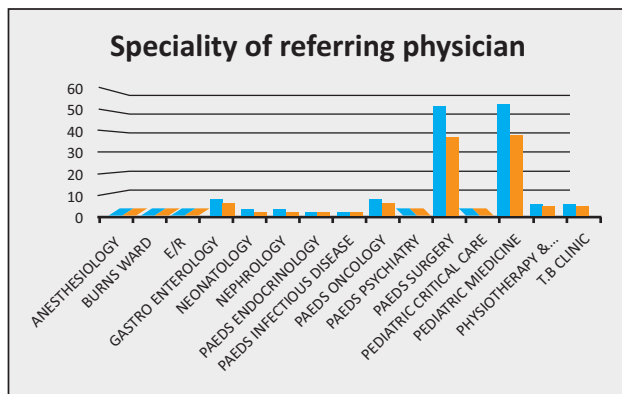


Chart 2:

respondents were from physiotherapy and rehabilitation, T.B clinic, psychiatry, infectious disease, and endocrinology. (Chart 2)

Most respondents were postgraduate trainees with 93 respondents (67%), followed by medical officers (MO) and consultants consisting of 17 participants (12%) and 11 (8%) respectively. The rest of the faculty members, resident medical officers (RMO), and registrar constitute a minority.

This study revealed a spectrum of communication channels from traditional in-person discussion to the usage of modern electronic tools including phone calls, short message service (SMS), e-mails and hospital messaging apps favoured by the respondents. Many of the respondents of both surgical and non-surgical specialities favoured in-person discussion with 85% from the non-surgical group whereas 100% of surgical participants expressed this preference. The chi-square test was applied for the communication channel between the surgical and non-surgical groups which turned out to be statistically significant with a p-value of 0.014. A small percentage of respondents also preferred other channels like WhatsApp or phone calls. This underscores the importance of face-to-face or in-person discussion especially among surgical candidates in the context of radiology consultation. (Tab.1)

Communication channel		Group		Total	P Value
		Non-Surgical	Surgical		
In-person discussions	Count	74	52	126	0.014
	%	85.1%	100.0%	90.6%	
Other (please specify) like whatsapp	Count	3	0	3	
	%	3.4%	0.0%	2.2%	
Phone calls	Count	10	0	10	
	%	11.5%	0.0%	7.2%	
Total	Count	87	52	139	
	%	100.0%	100.0%	100.0%	

Table 1:

The frequency of communication was variable among respondents from daily or several times a week interaction to occasionally or some did rarely. The majority of the participants 81 (58%) responded several times a week which is a frequent communication. Despite having various communication channels contentment with the speed of communication and

clarity of radiology reports was not constant among respondents. Many expressed satisfaction with fast response and radiology reports, while some respondents faced challenges of slow response and incomplete information.

Though 78 respondents (56%) believed that radiology reports are very clear and comprehensive, a significant number of participants from both surgical and non-surgical groups perceived the radiology report as clear but lacked detail, 46% of the surgical 23% of the non-surgical group expressed their opinion. On applying a chi-square between those two groups, this perception was statistically significant with a p-value of 0.035. (Tab.2)

Satisfaction with communication via radiology reports		Group		Total	P Value
		Non-Surgical	Surgical		
Clear but lacks details	Count	20	24	44	0.035
	%	23.0%	46.2%	31.7%	
Neutral	Count	12	4	16	
	%	13.8%	7.7%	11.5%	
Unclear and incomplete	Count	1	0	1	
	%	1.1%	0.0%	0.7%	
Very clear and comprehensive	Count	54	24	78	
	%	62.1%	46.2%	56.1%	
Total	Count	87	52	139	
	%	100.0%	100.0%	100.0%	

Table 2:

This discrepancy demands incessant improvement in the communication process for effective radiologist/referring physician information exchange.

In this study, one of the significant potential barriers in communication was found to be a different communication style with a maximum response of 71 (51%), potentially resulting in misunderstanding and patient management. Though linguistic obstacles are prevalent in diverse healthcare settings which compounded these challenges, however, no such obstacle was reported by the respondents. Rather, a significant number of respondents, 46 (33%) encountered a challenge of the impact of radiologist workload on communication efficiency which ultimately led to a delayed response.

Additionally, 72 respondents (52%) prioritized the use of structured reports to improve the quality and clarity of information exchange. Whereas 49 respon-

dents (35%) believed that a structured template would help to some extent. The structured report follows a predefined pattern having main sections of clinical indications, examination or scanning technique, imaging findings, impression, and recommendations. This leads to the clarified, complete, and uniform message in the radiology report. This streamlines the communication methods facilitating the better comprehension of radiologists and referring physicians. Moreover, regarding emergency cases, direct phone calls arose as the favourite and favoured communication channel possibly due to its efficiency in conveying the information hence making quick decisions. The chi-square test was applied between surgical and non-surgical groups for communication preference for urgent cases. Most of the non-surgical participants chose immediate phone calls for urgent cases constituting 44% of the total response. In contrast, the surgical respondent had this choice with a lower preference with an 11.5% response. The difference in communication preference for urgent cases was found to be statistically significant with a p-value of 0.0001. Moreover, the surgical respondents had a stronger preference for in-person discussion possibly due to their heavy reliance on the radiologist. (Tab.3)

Communication preferences for urgent cases		Group		Total	P Value
		Non-Surgical	Surgical		
Immediate phone call	Count	39	6	45	0.001
	%	44.8%	11.5%	32.4%	
Immediate phone call, In-person consultation	Count	14	13	27	
	%	16.1%	25.0%	19.4%	
Immediate phone call, Urgent email notification	Count	1	0	1	
	%	1.1%	0.0%	0.7%	
In-person consultation	Count	31	33	64	
	%	35.6%	63.5%	46.0%	
Urgent email notification	Count	2	0	2	
	%	2.3%	0.0%	1.4%	
Total	Count	87	52	139	
	%	100.0%	100.0%	100.0%	

Table 3:

For complex cases, 80 respondents (58%) strongly believed and expressed their keen interest in interdisciplinary meetings as a valuable option for the discussion of valuable insights, promoting collaboration

and enabling healthcare personnel to grow professionally and to have a collective brainstorming solution leading to better patient management and optimum outcomes.

Moreover, along with traditional methods of communication, 129 (93%) respondents recommended making the most of electronic tools such as short message service (SMS), hospital messaging apps, electronic health records, interdepartmental communication tools, and automated notification alerts for efficient communication. Many also suggested scheduled time slots. All these pieces of communication tools offer flexible, easily accessible, rapid, and unified exchange of information even in busy clinical settings. According to some respondents, improved training programs focusing on comprehending diverse communication styles were recommended to train healthcare personnel with optimum skills and knowledge to steer the communication dynamics effectively.

Discussion

Effective communication is a requirement for high-quality medical care.⁵ Adequate communication between radiologists and referring physicians is quite necessary for decent clinical practice and better patient outcomes. Many sprains are encountered in good communication, particularly in a busy clinical setting. These include a lesser number of frequent communications, delayed response from a radiologist, incomplete radiology findings, and confusing radiology reports. These may dissatisfy the referring physicians which ultimately affects patient management.⁶

Fatahi N et al. mentioned in their study, that in-person discussion is an essential requirement for mutual understanding in interprofessional communication.⁷ Similarly in this study, many of the referring physician emphasizes not only frequent but also face-to-face communication channels for the usual talk of radiologists/referring physicians.

Lesslie MD et al. demonstrated in their study about general satisfaction of referring physicians with radiologists but competence was noticed from orthopaedics surgeons' perspective, possibly due to their analysis of the image themselves in daily routine.⁸ Similarly, the perspective of referring surgeons was

quite noticeable in terms of communication satisfaction regarding radiologists' quick response, radiology reports explaining imaging findings, and feedback from radiologists than non-surgical referring doctors, possibly because the surgeons heavily rely on radiologists. However, the most encountered challenges in this study were found to be the different communication styles of radiologists, and the workload of radiologists. Hence it is proven that radiology complements significant worth to the referring physicians and the patients as well.

Burns J et al. showed in their study that a structured radiology reporting template is mainly centred on effective communication thereby improving eminent care and well-being for patients. The structured reporting template allows organized searching for pertinent positive and negative imaging findings however it lacks the development of an organized or formulated impression reported by radiology individuals.⁹ In this study, similar results were found as the maximum number of respondents from surgical and non-surgical doctors were in great favor of the structured reporting template though impression varies in terms of formulation but carries the same message reported by radiologists.

Plumb AA et al. and Magnetta MJ et al. emphasized the importance of quality radiology reports and highlighted that they improved diagnostic accuracy.¹⁰⁻¹¹ Becker CD et al. said about radiologist adaptation of final report enabling referring physicians and patients to understand the imaging findings.¹² Likewise, in this study, most of the referring physician gave their opinion about the clarity of the report but lacked details. This typically means that a clear and concise impression has been transferred but it might not contain specific information to elaborate the certain aspects of the examination, which is a demand of referring physicians to make decisions appropriately. This could mandate additional supplementary imaging findings to obtain a comprehensive finding for justified elaboration of disease.

Fatahi N et al. discussed in their study about several difficulties in traditional oral and written communications. They also highlighted the optimization of such issues via joint discussion educational seminars, and conferences to improve diagnostic quality, avoiding unnecessary delays in optimum patient care.¹³ Correspondingly, in this study, many of the

referring physicians strongly believed the meeting between the radiologists and referring physicians help collaboration for better patient outcomes. Many of the referring physicians were in favour of getting feedback on phone calls for urgent cases as the slow response significantly affects patient care. They also suggested certain electronic tools SMS, email and phone calls would also help in better communication due to its proficiency in transmission of the information hence making quick decisions. In their opinion hospital may also play a great role in making better communication dynamics via messaging apps, scheduled time slots and improved training of doctors. Such curricula direct the grasping of various communication styles to train healthcare professionals to steer the communication dynamics effectively.

Traditionally the radiologist used to transmit imaging findings to the referring physicians without directly communicating with the patients. But now, the traditional mode of communication is being replaced by patient-centred radiology. Erdogan et al. highlighted that, at the institutional level, many referring physicians are uncomfortable with the direct communication of radiologists to the patient however, almost all referring physician expressed their opinion that radiologists should be obliged to disclose the imaging findings in the radiology report emphasizing that radiologists are not the primary physician.¹⁴

The dearth of proper communication between the radiologist and referring physician is one of the important medical errors that badly affect patient management.¹⁵ Hence, optimum quality communication may have a good impact on patient care and safety, otherwise, miscommunication may lead to medico-legal penalties.¹⁶

The dynamic of communication between the radiologist and referring physician holds a promising significance for individual patient care and the total excellence of health care.¹⁷

By understanding the perspective of referring physicians via appropriate communication radiology department and radiologists may play a pivotal role in enhancing diagnostic quality and ensuring patient safety. Overall referring physicians frequently communicated with radiologists, particularly surgeons, and many of them expressed their satisfaction in communication with the radiologist. In-person discussion was a pre-requisite for mutual understanding

and trust building which is essential for interprofessional communication. However, other possibilities of usage of appropriate electronic tools including SMS etc and hospital-based management including improved training of doctors, and scheduled time slots for discussions would also be of great help in better time-constraint communication.

The limitation of this study is that it s a single institutional-based study of pediatric tertiary care. Covering the same aspect of communication dynamics between radiologists/referring physicians from multiple institutions of other pediatric care and adult tertiary hospitals may cover a broader range of opinions. It also lacks the patient-centred radiology opinion of referring physicians as the growing patient-centred radiology is overtaking the traditional reporting system worldwide.

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