

Title	Interprofessional care in intensive care settings and the factors that impact it: Results from a scoping review of ethnographic studies
Running Title	Interprofessional care in the ICU
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Abstract (100-200 w)	<p>At the heart of safe cultures are effective interactions within and between interprofessional teams. Critical care clinicians see severely ill patients who require coordinated interprofessional care. In this scoping review, we asked: "What do we know about processes, relationships, organizational and contextual factors that shape the ability of clinicians to deliver interprofessional care in adult ICUs?" Using the 5-stage process established by Levac et al. (2010), we reviewed 981 abstracts to identify ethnographic articles that shed light on interprofessional care in the ICU. The quality of selected articles is assessed using best practices ethnographic research; their main insights evaluated in light of an interprofessional framework developed by Reeves et al. (2010). Overall, studies were of mixed quality, with an average score of 5.8/10 (SD = 1.77). Insights into ICU cultures include the importance of paying attention to workflow, the nefarious impact of hierarchical relationships, the mixed responses to protocols imposed from the top down, and a general under-theorization of gender and race. This review highlights several lessons for safe cultures, and argues that more needs to be known about the context of critical care if quality and safety interventions are to succeed.</p>

Introduction

At the heart of safe cultures are effective interactions within and between interprofessional teams,¹ and the need for effective team-based care to reduce duplication of effort, restrict clinical error, improve safety and enhance the quality of patient care is now widely acknowledged.²⁻⁵ In critical care, the combination of severe illness and patient variation places interprofessional care under particular pressures, yet we know little about the factors that influence provision of care in this context: our extensive search yielded no review of this literature thus far.

A deep, multi-faceted understanding of these factors will be fundamental to improving interprofessional care delivery in the ICU.^{6,7} Reeves et al. (2010) have argued that four categories of factors define team dynamics and shape the outcomes of interprofessional care: processual, relational, organizational, and contextual.⁸ Table 1 provides definitions of these types of factors, examples of factors that fall within the type, as well as an example of such factors at play in the ICU.

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In this manuscript, we use these categories to structure findings from a scoping review⁹ of the literature on interprofessional care (IPC) in adult ICUs based on the following research question: what do we know about the processes, relationships, organizational and contextual factors that shape the ability of clinicians to deliver interprofessional care

in adult ICUs? We therefore restricted our search to ethnographic studies, given the recent push for a greater use of ethnography in confronting health care challenges generally,¹⁰⁻¹³ and critical care quality and safety projects more specifically.¹⁴

Ethnography is the study of social interactions, behaviors, and perceptions that occur within teams, organizations, and communities through the systematic collection of detailed site observations and both formal and informal interviews with members of the team, organization or community one investigates.¹² Of the range of qualitative research methods available (e.g. interview studies, discourse analysis, etc.), ethnography is recognized as the most appropriate to understand “cultural phenomena” *in situ*, and the way they structure care environments. Ethnographers, through prolonged exposure to a specific context, become outsider experts on it and can describe the culture of the environments they investigate.¹⁵ Our hope, then, with this study, was to better understand the different factors that impact IPC delivery in the ICU through the eyes of those who have immersed themselves in these contexts.

Methods

Scoping reviews are intended to map the existing literature or evidence base, to either identify research gaps, summarize findings, or inform further systematic reviews.^{9,16} We conducted this scoping review following the five stages identified by Levac et al. (2010)⁹: (1) identifying the research questions; (2) identifying the relevant study; (3) identifying criteria for study selection; (4) charting the data and (5) collating the results. We searched, collated and assessed the quality of studies using well-established criteria in the

ethnographic literature (see below). We also aggregated the studies' main findings using the interprofessional framework⁸.

Stage 1: Identifying the Research Question

To develop our research question, we reviewed the literature on interprofessional collaboration broadly, and settled on the framework developed by Reeves et al. (2010). This recently published framework emerged from a comprehensive review of this literature by four experts in the field, and synthesizes and evaluates several other such frameworks. We narrowed our area of inquiry to critical care settings and asked: what do we know about the processes, relationships, organizational and contextual factors that shape the ability of clinicians to deliver interprofessional care in adult ICUs?

Stage 2: Identifying Relevant Studies

Given the broad diversity of terms used to denote interprofessional practices and care,¹⁷ and the broad diversity of terms used to describe qualitative research, our PubMed/MEDLINE search strategy was meant to be as inclusive as possible in order to limit the number of false negatives, and to use insiders to the field of interprofessional research and trained ethnographers to select and code the articles. We selected the PubMed database because it is the most comprehensive, largest health research database in the world, counting over 22 million citations.¹⁸ EP ran the following queries in PubMed/MEDLINE on January 17, 2013:

[1] (critical care) AND (ethnograph*) NOT (neonatal) NOT (pediatr*) AND ("2000/01/01"[PDAT] : "3000/12/31"[PDAT]);

[2] (critical care) AND (qualitative research*) NOT (neonatal) NOT (pediatr*) AND

("2000/01/01"[PDAT] : "3000/12/31"[PDAT]).

The first query returned 219 articles; the second 798. Metadata for all articles thus generated was downloaded as spreadsheets, which were then merged by PubMed ID, and duplicates (n=36) identified and removed, for a total of 981 articles.

Stage 3: Criteria for Study Selection

Inclusion criteria for full review were the following: the article had to: (1) have been published in English; (2) be about interprofessional phenomena, broadly defined; (3) conducted in critical care settings; (4) be empirical (i.e. based on original data, thus excluding opinion pieces and literature reviews); and (5) as ethnography is defined by its use of naturalistic, *in situ* observation of everyday behavior, data collection had to include a period of observation.

First, EP and a research assistant, both insiders to the interprofessional research field, read through all 981 abstracts independently to identify articles English-language articles discussing interprofessional issues (criteria 1 and 2). 137 articles were thus identified as IP-related. Second, another research assistant, an outsider to the field, read through the titles and abstracts of the selected articles to eliminate those that were not about critical care (false positives with our PubMed/MEDLINE search). EP reviewed her work. Two more duplicates were eliminated, yielding a total of 48 IP-related articles situated in critical care (criterion 3). Third, EP reviewed these articles were finally reviewed and rejected studies that were not empirical and did not include a period of observation (criteria 4 and 5). A final count of 16 articles met all inclusion criteria.

Finally, EP and ML, two trained ethnographers, read independently through the 16 articles to (1) evaluate their quality based on the 10 quality criteria below, and (2) identify which among Reeves et al.'s (2011) factors were discussed in the articles.

Stage 4: Charting: Evaluating the Quality of Studies

The following criteria (dichotomous yes/no) were taken from the ethnographic research methodology literature¹⁹⁻²² and used to evaluate quality:

- (1) The author(s) acknowledge the biases that may have impacted their data collection and interpretation;
- (2) A rationale for the sampling method is given;
- (3) Details are given about data collection;
- (4) The authors sought to maximize the range of perspectives obtained;
- (5) The authors used member check to validate their understanding with the populations observed;
- (6) Data was analyzed iteratively;
- (7) The authors use theory to either orient their inquiry or discuss their results;
- (8) Data were triangulated to increase validity;
- (9) Exceptions to the main story are acknowledged;
- (10) Results are discussed in dialogue with previously published literature.

Each of the 13 disagreements on quality ratings (out of 160, or 8.1%) was reviewed individually, and consensus on the value was established between EP and ML. A quality score (0-10) was calculated by adding ratings on the 10 items above.

Stage 5: Collating: Identifying Factors that Influence Interprofessional Care

Table 1 above defines and builds upon the typology developed by Reeves et al. (2011) and illustrate how these factors play out in the ICU. Although presented separately, these factors arguably interact to structure interprofessional interactions in predicable ways.

In Stage 1, EP and ML, both familiar with this framework, independently coded each of the 16 articles on these four dimensions. Only one disagreement occurred in the coding of factors (out of 64, or 1.5%), and was resolved by consensus. In Stage 2, the main insights arising from each article were extracted and organized by factor type (processual, relational, organizational, contextual). They are presented below.

Results

What factors influence interprofessional care?

On average, each of the included papers discussed 2.7 (SD=0.70) types of the 4 factors (see Table 2). A large majority of articles discussed some processual and relational factors influencing interprofessional care deliver in the ICU (15/16, each). About half discussed organizational factors, but only 4 (25%) discussed contextual factors. Only 2 articles^{23,24} covered all four types of factors, thus providing a rich, embedded description of observed phenomena. Below we present results in relation to each of these factors (see also Table 2).

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Processual Factors

Processual factors are those that impact the way work is undertaken, such as time, space, resources and routines. A broad range of processual factors were mentioned as important elements of IPC. First, family and staff (mis)understandings of professional hierarchies,²⁵ as well as (mis)understandings of professional roles, expertise, practices and everyday work routines^{25,26} impact the ability of staff and family to collaborate in care provision.

Second, several studies indicated that nurses in particular develop strategies of resistance to certain work practices that sideline them. Two studies discussed how nurses participate in rounds despite not being fully included²⁷ or forced to overcome what one author has called “immense barriers.”²⁸ Hill’s provocatively titled “Sound of silence” outlined how nurses join rounds without being invited; learn the routine of doctors’ interactions to find ways to intervene; plan what they need from rounding physicians; and make themselves noticed through eye contact – be it inclusionary or exclusionary, coy or authoritative.²⁷ Similarly, Manias and Street showed how nurses feel marginalized and demeaned in the rounding process and resist the medical definition of rounds with anger, sometimes adding information and creating opportunities to speak up.²⁸ The fact that physicians in the hospital where Manias did her fieldwork rounded in their own specific room or space had important consequences for nurses’ feelings of exclusion.

Third, attention to workflow in care delivery helped some scholars highlight critical moments where patient safety can be jeopardized. For example, Malhotra et al.’s workflow modeling within space and over time led to the identification of 10 different key activities in the unit they observed (e.g. resident change, nurse change, clinical

rounds, admission, transfer, etc.) which they argue are the most likely to lead to errors. They recommended the development of protocols to protect patients at these key moments.²⁹ Another study focused on patient handovers as key moments for both patient safety and family relationships.²⁵

Finally, some studies suggested that the medical paradigm's discomfort with the display and acknowledgement of emotions has important consequences for patient care. In one case, humor was shown to help reframe care realities in ways that were less threatening to clinicians, and thus helpful to their practice.³⁰ In another, it was found that the cultural impropriety of emotions pushed clinicians to conceal them from peers and reject them instead of acknowledging and seeking help, with important negative consequences on the everyday care relationship.²⁴

Relational Factors

Relational factors are those that directly impact relationships among clinicians and between clinicians and patients or families. Interpersonal (including interprofessional) communication and collaboration are key features of intensive care and likely "critical zones" for medical errors.²⁹ As noted above, some studies suggested that we should reframe the use of humor³⁰ and the display of emotion²⁴ as enablers rather than hurdles to communication and collaboration. Confusion about clinicians' roles was found to limit families' ability to relate to clinicians and discuss end-of-life care with them, while also inducing uncertainty and stress among both families and nursing staff.²⁵

One author invited readers and researchers to reconsider historical hierarchies and

discourses that do not take into account current interprofessional dynamics and the actual blurring of roles as the medical basis of nursing has increased and standards for doctors to care have changed,²⁶ while another showed the inter-reliance of nurses and doctors in several areas, including medication management.^{31,32} Overall, hierarchical relationships are described in most studies as hindering care and as potentially harmful,^{23,25-28,31-34} while processes that flatten hierarchies³⁴ or help clinicians bond³⁰ are seen as helpful, and top-down decisions perceived to be physician-driven as invitations to resistance.^{23,27,32,33,35} More on resistance below.

Organizational Factors

Organizational factors are those that influence and structure the environment in which care teams interact and provide care. Only two articles highlighted the impacts of organizational complexity of current critical care provision.^{25,34} This complexity manifests itself in challenges for care teams to escalate concerns across disciplinary and hierarchical boundaries,³⁴ but also in clinicians' understanding of the structures and resources available to them and to patients' families.²⁵

Protocols and policies are other important factors seen as impacting IPC. On the one hand, rapid response systems and associated protocols have been found to flatten professional hierarchies and thus improve collaboration during critical incidents.³⁴ On the other, protocols and policies are often found to induce resistance, most particularly when they are perceived by nursing staff to have been unilaterally imposed on them by medicine. For instance, in the case of mechanical ventilation, one study found its reconstitution through policy as a nursing responsibility triggered dissatisfaction among

nurses;³⁵ another study showed important individual variation in following a protocol for ventilation based on how much value was accorded to medical versus nursing knowledge, and the professionally constructed greater nursing awareness of patients' status and needs.²³

An ethnographic study of a bathing protocol during mechanical ventilation weaning trials drew similar conclusions. The study found nurses and families valued hygiene over medical evidence that patients need to conserve energy during trials, and that baths are energy consuming.³³ Another study suggested that while policies and protocols can have important positive impacts on patient safety, by their nature they focus on particular signs and symptoms to the exclusion of others, which may make escalating concerns about non-protocol factors difficult.³⁴ Finally, lack of organizational support for clinicians dealing with patient death may have negative impacts on clinician wellbeing and on quality of care.²⁴

Contextual Factors

Contextual factors are those that pertain to the broad social, political and economic landscape within which care is provided. Only two articles investigated the role contextual factors play on interprofessional collaboration. Experience on the job was found to be a determining factor in clinicians' interactions with technology²³ and use of emotional labor to cope with difficult work situations.²⁴ The systemic rejection of emotion as a valid response to work struggles in health care was also blamed for lower wellbeing among clinicians and poorer quality of care.²⁴

Quality of articles

Articles' quality score ranged from 3/10 to 9/10, with a mean score of 5.8/10 (SD = 1.77). Only 9 of 16 articles score above 5/10. On average, each criterion was met by 9.2 articles out of 16 (SD = 3.85). Of the 10 criteria (see Table 3), the three least frequently observed one were acknowledgement of exceptions (6/16 articles) discussion of authors' biases (5/16), use of member check (4/16). The four most frequently observed were details of data collection (15/16), connection with previous literature (14/16), maximization of the range of perspectives (12/16) and discussion of the sampling method (12/16).

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Discussion

This scoping review has shown that the ethnographic literature on interprofessional collaboration is small and of mixed quality. Indeed, barely over half of the articles scored above 5 out of 10 on our quality score based on best practices in ethnographic research. While most studies do provide details of data collection and connect their findings with the previous literature, a small minority integrated exceptional cases, and even fewer discuss authors' biases or sought validation from cultural insiders. This poor quality may be due to the still under-appreciated need for a shared definition of quality in qualitative research. Several authors have discussed this situation and suggested criteria to be used by journal editors and reviewers over the years.^{19,22,36,37} Yet greater uniformity and

quality in published outcomes is likely to take several more years. Given the recent push for the use of ethnography in intensive care research,¹⁴ we can expect even longer delays for this type of qualitative method.

Articles framed their contributions within an average of 2.7 out of 4 different factor types that have been theorized to influence interprofessional collaboration. Processual and relational factors were most regularly discussed; organizational and contextual factors were more rarely investigated. The latter were absent, given the highly gendered and racialized context of health care delivery. Not once in the sample were gender and race discussed. For social scientists who are trained to see phenomena at this level, this is highly surprising. While medical researchers have only recently discovered the importance of the “psychosocial” on health and health inequalities,³⁸ the dominance of the biomedical imagination remains unquestionable.³⁹ That the focus on the individual would dominate ethnographic research in medicine is thus predictable, but its partiality needs remediation.

This scoping review of the main insights issuing from the sample showed a broad range of processual factors influencing interprofessional care (misunderstandings of roles and hierarchies; resistance to certain practices; critical moments in workflow; utilization of space; role of emotions) and in many cases, patient and family outcomes. Among relational factors, humor and emotions were found to transform care relationships, while confusion about clinicians’ roles was found to be stress and uncertainty inducing. There was close to consensus on the negative impact of hierarchical relationships on the quality

of interactions, care and safety. Studies that foregrounded organizational factors discussed the negative impacts of organizational complexity and associated boundaries on care, and several highlighted the resistance of nurses towards care protocols that were seen to minimize or sideline the contributions of nursing. Finally, the only contextual factors considered in the literature were the role of experience on interactions with technology or coping, and the impact of a culture that systematically devalues displays of emotion in the care relationship.

These studies offer a number of lessons for patient safety. First, clarifying the roles of different professionals and different care teams could improve the flow of information, work relations, as well as family relationships. Second, using methods to map the workflow and identify the points where errors are most likely may generate solutions to improve unit safety. Third, providing a space where clinicians can bond – either by using humor or by enabling the sharing of struggles with peers – could improve the work climate and workers’ emotional wellbeing. Finally, including all stakeholders in the development of protocols; the transfer of responsibility for technology from one profession to another; and clear discussions of the evidence that supports these protocols and transfers is likely to be central to generating staff buy-in and avoiding the sort of resistance that may lead to medical errors, or near-misses.

These studies also offer a number of lessons for quality of care. First, poor interprofessional relations can lead to feeling of alienation and subversive practices that may negatively impact quality of care. Second, a work environment where emotions are

denied may may lead to feelings of alienation and distancing from work. Third, confusion about roles within care teams and among families has, potentially, serious negative impacts on the ability to provide high-quality care to both patients and families. Indeed, families who do not know which provider to contact may have importance questions about care delivery unanswered. Finally, organizational complexity and obfuscating policies may have a detrimental impact on quality of care, while systems that flatten hierarchies and emotional support for clinicians may improve it.

Concluding Comments

This scoping review was undertaken to answer the following question: What do we know about the processes, relationships, organizational and contextual factors that shape the ability of clinicians to deliver interprofessional care in adult ICUs? The best answer to this question is that we still know very little. The small number of studies that have taken on the challenge of documenting interprofessional care in the ICU is very small, and of mixed quality. Yet from these studies we gained insight into the fragility of interprofessional relationships, and into the richness of the data that will be needed to better understand and then improve these relationships.

The success or failure of patient safety and quality improvement interventions in the ICU will be contingent on the proper assessment of their context,⁴⁰⁻⁴² which we have formalized here as 4 different categories of factors influencing care. The ethnographic research reviewed here shows that we have much to learn about the team processes that facilitate or constrain work in the ICU, but we are confident that the method can deliver

much more than it has so far.^{11,13,14,43}

Moving forward, ethnographers and reviewers will have to pay attention to the quality of the research output by using the methodological guidelines developed by experts in the field.¹⁹⁻²² They will also have to pay greater attention to the embedded nature of care, and deliver on the fundamental insight that interprofessional interactions in the ICU do not happen in a historical, social and technological vacuum. To further the patient safety and quality of care agenda, future research will need to better theorize its local particularities, and describe where it sits at the intersection of processual, relational, organizational, and contextual factors. Comparative research^{44,45} – whereby similarities and differences are highlighted on the basis of ethnography across ICUs – has in this respect immense potential to highlight why and how interprofessional care takes this or that form, and where and how it can be improved.

Ethnography cannot be a panacea, and should be employed to help develop a culturally sensitive understanding of the social interactions, behaviors, and perceptions that occur within teams, organizations, and communities. As the blind spots of one methodology can be considered the focal points of another, it is only by asking a broad range of research questions and choosing the appropriate methodological approach to answer it that we will learn about the world of intensive care. Similarly, the framework developed by Reeves et al.⁸ can serve to sensitize ethnographers to the broad range of factors that influence care delivery,⁴⁶ beyond the merely technical and individual aspects that have traditionally dominated medicine and medical research.

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