

Using Conceptual Triangulation to Develop an Integrated Model of the Symptom Experience of Acute Rejection After Lung Transplantation

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The aim of this study was to develop a comprehensive model of the symptom experience associated with the development of acute rejection after lung transplantation by integrating the findings from a theory-testing quantitative study that explored the physiologic aspects and a theory-generating qualitative study that explored the interpretive aspects. Findings from the multimethod studies were integrated using conceptual triangulation methods described by Foster (*Adv Nurs Sci.* 1997;20:1-12). The integrated model will guide the development of interventions to promote effective patterns of symptom recognition and reporting of acute rejection. **Key words:** graft rejection, grounded theory, lung transplantation, models theoretical, qualitative studies, quantitative studies, symptoms, transplant recipients, triangulation

BACKGROUND AND SIGNIFICANCE

Rejection after lung transplantation

The majority of lung transplant recipients (LTRs) experience improvement in their underlying conditions but face the threat of acute rejection that invariably develops and often restricts the quality of survival.¹ In spite

of immune suppression efforts, acute rejection is a common complication, with 75% of all LTRs developing acute rejection within the first year.² The critical need for prompt and accurate detection of acute rejection is underscored by its substantial impact on morbidity and mortality. Although rarely fatal, acute rejection predisposes LTRs to the development of chronic rejection, the primary determinant of mortality after transplantation.² Survival is enhanced when acute rejection is detected early and appropriate treatments are initiated.³ Therefore, strategies that aid detection are greatly needed.

Symptoms and detection of complications

Symptoms, defined as perceived indicators of change in normal functioning as experienced by patients,⁴ are typically the initial point at which a patient detects that he or she

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is ill, or that an existing condition is worsening.⁵ Symptom recognition is known to herald the onset of acute complications and prompt patients with lung diseases such as chronic obstructive pulmonary disease⁶ and asthma⁷ to seek appropriate medical attention. In contrast, after lung transplantation, symptoms that may forewarn of acute rejection are difficult to reliably detect until the lung is severely compromised.⁸ This assumption is based on studies that revealed biopsy evidence of unsuspected rejection in 25% of apparently healthy LTRs participating in post-transplant surveillance protocols.⁹ In addition, it is commonly accepted but not confirmed that symptoms of acute rejection cannot be reliably distinguished from symptoms of pulmonary infection, another common complication after lung transplantation.¹⁰ These observations suggest that symptoms of acute rejection develop insidiously or overlap with symptoms of posttransplant pulmonary infections and thereby evade detection. A better understanding of the symptom experience associated with acute rejection may assist patients to detect its development.

Symptoms are known to be multidimensional,¹¹⁻¹³ including both the physiological sensations that signal patients that some internal condition is different and the interpretive processes that motivate patients to construct meanings for the symptoms and decide how to respond to them.¹⁴⁻¹⁷ Accordingly, when

exploring the symptom experience of acute rejection, it is crucial to examine both dimensions. By accounting for both the physiologic and interpretive dimensions of the symptom experience, our understanding of the interdimensional relationships of the symptom experience will be more complete. Furthermore, such an exploration may increase the likelihood of identifying points for possible intervention. Thus, the aim of this study was to develop a comprehensive model of the symptom experience by integrating the findings from a quantitative study that explored the physiologic aspects and a qualitative study that explored the interpretive aspects of the symptom experience associated with the development of acute rejection after lung transplantation (Fig 1) in order to guide the development of interventions for detection of rejection.

CONCEPTUAL TRIANGULATION

Triangulation is not a mixture of paradigms per se, but rather differing paradigms are reflected in the technique.¹⁸ The term *triangulation* denotes a design that combines multiple points of view, multiple data sources, or multiple methods. Conceptual triangulation provides a means to integrate multimethod findings without violating paradigm-specific assumptions,^{19,20} because blending or

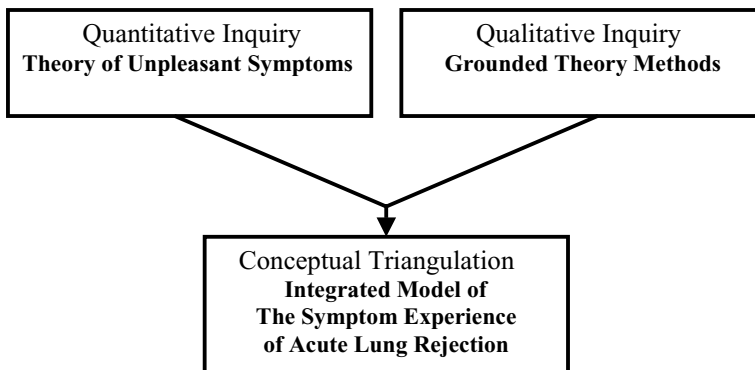


Figure 1. Research framework for the study.

merging of the data does not occur in the triangulation process, but in the fitting of the findings from each study into a cohesive and comprehensive description.²¹ This approach assumes that the researcher values qualitative and quantitative methods equally for their ability to explain human phenomena and ground therapeutic actions and has drawn no a priori conclusions about the relative contribution of each method to the study.¹⁹

Support is mounting for combining multiple modes of inquiry to understand the complex and diverse phenomena of concern to nursing.²²⁻²⁶ Recognition that the physiological and interpretive dimensions of a symptom experience are interrelated and equally important opens up new possibilities for nursing interventions.²⁷⁻³⁰ Finally, valuing the uniqueness of individual patients and viewing them as active participants in management of their illness makes it essential to incorporate their subjective voice in methods of research to illuminate the symptom experience of acute rejection after lung transplantation.³¹⁻³³

METHODS

To integrate the mixed-method findings regarding the symptom experience of acute rejection, the conceptual triangulation procedures described by Foster¹⁹ were followed.

Step 1: Conducting the parallel studies

First, the quantitative (Table 1) and qualitative (Table 2) studies were conducted in parallel true to the paradigmatic assumptions of each method in order to preserve the integrity and unique contribution of each to our understanding of the symptom experience.

Step 2: Distinguishing pertinent results within method

The results derived from the distinctly executed quantitative and qualitative studies were examined within method first to identify the pertinent findings for integration.

Methods of the quantitative study

As described in the theory of unpleasant symptoms,¹² physiological antecedents,

Table 1. Summary of quantitative study: The influence of acute rejection and pulmonary infection on symptoms after lung transplantation

Specific aims
1. Determine the influence of acute complications (acute rejection [AR] and pulmonary infection [PI]) on the type and frequency of symptoms reported by lung transplant recipients (LTRs)
2. Determine the potential for using symptoms to detect the presence of AR versus PI after lung transplantation
Research questions
1. Are there differences in the type and frequency of symptoms reported by LTRs due to levels of AR or PI?
2. How useful are the type and frequency of symptoms for detecting the presence of AR versus PI after lung transplantation?
Data sources
1. AR determined by transbronchial biopsy results archived in database
2. PI determined by use of antimicrobial treatment archived in database
3. Questionnaire for Lung Transplant Patients ³⁴ (patient reports of type and frequency of symptoms)
Design
Retrospective, comparative design
Sample
120 randomly selected recipients with ($n = 60$) and without ($n = 60$) AR; subgroup comparison with AR alone ($n = 47$) and with PI alone (28)

Table 2. Summary of qualitative study: Symptoms and the threat of rejection after lung transplantation

Specific aim
Explore the interpretive process of how lung transplant recipients (LTRs) evaluate and attribute symptoms to the threat of acute rejection
Research question
How do LTRs perceive, interpret, and relate symptoms to the threat of rejection?
Data sources
1. Face-to-face interviews
2. Follow-up phone calls
3. Field notes of observations in the clinical setting
4. Clinical records
Design
Grounded theory methods, constant comparative analysis
Sample
14 LTRs using open, purposive, and theoretical sampling techniques

including pathophysiologic conditions, are often reflected in and may be detected by the presence of certain symptoms, and therefore provided a theoretical basis for the quantitative study. The purpose of the study was to examine the influence of acute lung rejection on symptoms, and the potential usefulness of symptom reports for detecting acute rejection and differentiating between the 2 most common pulmonary complications after lung transplantation, acute rejection and pulmonary infection.

The study was a retrospective analysis of data provided by LTRs during routine follow-up visit. The following steps were taken to identify the sample: (1) 120 LTRs were randomly selected from 286 LTRs followed by the pulmonary transplant program at the University of Pittsburgh Medical Center from June 1999 to June 2002; (2) all follow-up visits for these 120 subjects were identified (mean was 4.5 ± 3.1 visits per patient); (3) one follow-

up visit was randomly selected until 60 visits that resulted in a diagnosis of low-grade acute rejection (A0 or A1) and 60 visits with a diagnosis of clinically significant acute rejection ($\geq A2$) were identified. First, symptom type and frequency were compared between LTRs with ($\geq A2$) ($n = 60$) and without clinically significant acute rejection (A0 or A1) ($n = 60$). Next, 2 mutually exclusive subgroups were created: (1) LTRs with clinically significant acute rejection ($\geq A2$) but no pulmonary infection ($n = 47$) and (2) LTRs with pulmonary infection but no evidence of clinically significant acute rejection (A0 or A1) ($n = 28$) and comparisons were made between these groups. Finally, sensitivity, specificity, and probability of false-positive and false-negative results for ($\geq A2$) rejection and pulmonary infection were determined for the 2 most commonly reported respiratory symptoms: shortness of breath and cough.

Results of the quantitative study

Overall, results of the quantitative study provided little evidence of variation in symptoms due to grades of acute rejection or pulmonary infection, and instead substantiated the complexity and ambiguity of the nature of symptoms reported after lung transplantation. Findings of this study revealed that LTRs with acute rejection reported symptoms at a comparable rate to LTRs with pulmonary infection and at a significantly higher rate ($P < 0.01$) than did LTRs without acute rejection, but the magnitude of difference (2–3 items) was not likely to be clinically significant. There were no statistically significant differences in the type or frequency of symptoms between LTRs with clinically significant rejection ($\geq A2$) and LTRs with infection. In fact, most symptoms overlapped among LTRs with acute rejection ($> A2$) or pulmonary infection. Furthermore, the presence of symptoms and biopsy evidence of acute rejection did not necessarily correspond.

For conditions such as acute rejection that have a better prognosis and fewer long-term repercussions if detected and treated early,

high sensitivity (few false negatives) is desired. Unfortunately, the false-negative rates for detecting clinically significant acute rejection using the symptoms of shortness of breath and cough were relatively high (37% and 36% respectively). Conversely, high specificity (few false positives) is also desirable to avoid prescribing enhanced immunosuppression to LTRs who are free of acute rejection. The false-positive rates for detecting clinically significant acute rejection using the symptoms of shortness of breath and cough were comparable (38% and 39% respectively). Since no symptoms were found to be sensitive (few false-negative results) or specific (few false-positive results) enough to identify LTRs with acute rejection, no symptom or symptoms were found to uniquely characterize acute rejection.

Although symptoms were associated with both complications, the complications were not distinguishable on the basis of symptomatology alone. While it was hoped that gaining a better understanding of the variation in symptoms would ease the dilemma of recognizing acute rejection and differentiating rejection from pulmonary infection, results of this study provided little evidence of variation in symptoms due to the influence of acute rejection or pulmonary infection. The findings substantiated the complexity and ambiguity of the nature of symptoms reported after lung transplantation.

Methods of the qualitative study

Grounded theory was selected to describe the dominant psychosocial process and portray the commonalities in meanings and symptom experiences among LTRs facing the threat of rejection. Fourteen participants were recruited from the pool of LTRs during a return visit to the center for follow-up. Initially, open sampling was used to select participants on the basis of general inclusion criteria: adult, English-speaking, LTRs, who were aware that rejection was diagnosed during their most recent follow-up evaluation. Next,

purposive sampling was used to assure participant variability on characteristics such as gender, race, underlying lung disease, prior rejection exposure, and time since transplantation. As the study progressed, theoretical sampling was used to enhance the emerging analysis. This included searching for negative and qualifying evidence. Study data were obtained from several sources: face-to-face interviews, follow-up phone calls, the clinical record, field notes, and memos made by the investigator.

Results of the qualitative study

Over the course of the study it became clear that LTRs' hopes for escaping rejection paralleled their expectations for a normal life after lung transplantation. The discovery that LTRs were *striving for normalcy* led to its selection as the core process of the symptom experience associated with rejection. The process was found to be dynamic in nature and had 4 stages. Each stage of the process was marked by an initiating event, a predictable symptom response, and a dialectic or internal struggle that LTRs faced as they tried to reconcile their personal perceptions of the situation with the juxtaposed understandings of the situation that they gleaned from transplant clinicians (Table 3). During the *stage of naïveté*, LTRs were so elated at improvements after transplant that they often denied or delayed reporting any symptoms because they attributed symptoms to everyday illnesses rather than to transplant-related complications such as rejection. Once they experienced a rejection episode they entered the *vulnerability stage* and became more vigilant about paying attention to symptoms, and considered rejection among possible explanations for symptoms. Once recipients were acutely aware of their vulnerability and need for vigilant monitoring for rejection, they felt compelled to identify rejection with certainty. During the *discovery stage*, they realized that symptoms were ambiguous and rejection lacked characteristic symptoms,

Table 3. Integrated model of the symptom experience associated with the threat of rejection and characteristic elements for each stage

Elements	Stages of striving for normalcy			
	Naïveté	↔ Vulnerability	↔ Discovery	→ Insight
Aspects of striving for normalcy	Expecting normalcy	Jeopardizing normalcy	Recognizing disparities from normalcy	Doing your part for normalcy in illness
Initiating events	Normalization of numbers	Episode of acute rejection	Search for symptoms of rejection	Recognition of the participant's role
Symptom responses	Reflected typical laymen's responses	Reflected admission of vulnerability	Reflected search for certainty	Reflected a proactive stance
Dialectics	Elation versus realism	Nonchalance versus vigilance	Certainty versus ambiguity	Autonomy versus partnering
Synthesis	Optimism	Surveillance	Recognition	Reciprocity

and that it was important to recognize any changes from their normal state. When recipients achieved the *insight stage* they acknowledged the reciprocal relationship between themselves and the team, including their role in detecting and reporting symptoms as possible indicators of complications. During the insight stage participants' symptom responses are proactive, not reactionary. Instead of waiting for symptoms to develop, they monitor their conditions routinely and check a variety of parameters everyday.

The process was not necessarily linear, sequential, or predictable in duration. Some LTRs moved sequentially through the stages, while others moved quickly through a stage, or skipped a stage entirely. Others were delayed in a certain stage, and still others progressed only to later revert to previous stages of the process, particularly back and forth between the vulnerability and naïve stages. Regardless of direction, sequence, or duration, circumstances surrounding striving for normalcy accounted for variation in progression or regression and therefore captured the essence of the interpretive dimension of

symptoms and the threat of rejection after lung transplantation. The development of insight was not solely a function of time or experience with rejection.

Step 3: Examining confidence in the results

The next step was to determine the credibility of findings by considering threats to rigor according to the methodological assumptions for each study.

Reliability and validity of quantitative results

Threats to internal and external validity were reduced by randomization and the retrospective design because the pool of potential subjects was already assembled, all cases were from the same population, and measurement of the predictor variables preceded measurement of the outcome variables. Threats to construct validity and differential measurement were limited because operational definitions for acute rejection and pulmonary infection were established and objective

measurements were performed using standard, reliable, and valid procedures without subject or data collectors' awareness of the outcomes of interest.

The retrospective design limited control over data reliability retrieved from the pulmonary transplant database since primary sources were not used. However, agreement between primary source documents (eg, pathology and laboratory reports) and database entries was found to be 100% as reported previously.² In prior psychometric testing,³⁴ the Questionnaire for Lung Transplant Patients was determined to be a reliable and valid measure of symptoms reported by LTRs. Threats to statistical conclusion validity were reduced by employing an adequately powered sample and meeting assumptions of all statistical tests.

Trustworthiness of qualitative results

Threats to trustworthiness were reduced by using a variety of data sources (interviews, observation, field notes, clinical records, and literature) and prolonged engagement with participants (multiple interviews and follow-up phone calls with each participant, and field observation of recipients and clinicians during posttransplant evaluations and interdisciplinary team meetings) to assure identification of convergent and divergent experiences from sufficiently varied LTRs with regard to frequency of rejection episodes, underlying lung disease, and time since transplant.³⁵ Allegiance to other symptom models, including the theory of unpleasant symptoms, was held in suspension to permit the substantive theory to emerge from the qualitative data analysis. Proper fit between recipients' experiences and the emerging framework was achieved by checking with participants informally at the conclusion of interviews and during follow-up phone calls, checking statements and expressions with subsequent participants, discussing the findings with seasoned transplant clinicians who concurred that similar sentiments were often expressed during their conversations with

LTRs, reviewing analysis with expert advisors, and maintaining an audit trail of methodological and analytical decision making.³⁶

Validity of the integrated model

Since the studies were conducted in parallel, strategies were used to safeguard the diverse assumptions by paying close attention to the rigor and integrity of all inquiry methods employed in the conduct of this research. The investigators were experienced in both types of inquiries and held no a priori conclusions about each method's relative contribution to the integrated model. Subjects for both studies were recruited from the same population, namely LTRs followed by the pulmonary transplant team of a large, metropolitan teaching hospital. Additionally, although subjects recruited for the qualitative study may also have been included in the quantitative inquiry, there was no reason that the samples for the 2 studies had to overlap.²¹ Instead, specific within-method sampling strategies were employed to ensure that both samples provided the focused perspective needed to adequately answer the intended research questions.

Step 4: Developing criteria for inclusion of results in the integrated conceptual model

Points that were considered when deciding which findings merited inclusion in the integrated model were those described by Foster¹⁹ and included the purpose of integrating multimethod findings, the existing science, and the relative risks of including weak results.

Purpose of integrating findings

In this study, the purpose of developing an integrated model of the symptom experience associated with rejection was to identify areas for possible intervention that reflected both the physiologic and interpretive dimensions of the symptom experience. Therefore

it was important to include all salient findings so as to identify as many potential strategies as possible.

Existing science

No previous studies have examined the symptoms that LTRs report during acute rejection episodes or whether LTRs perceive a symptom experience that they attribute to the development of acute rejection. However, a review of related literature helped to illuminate the strength of support for the studies' findings and place them in the context of existing science.

The quantitative study was the first to measure patient symptom reporting at the time of an acute rejection episode rather than relying on clinical impressions recorded by health-care providers. The results of this study provided empirical evidence to confirm previous acknowledgments^{9,37-39} regarding the complex and ambiguous nature of symptoms of rejection and therefore contribute to our understanding of the problems that transplant clinicians and LTRs face when trying to decide what symptoms mean and what to do about them. Overall, results of the quantitative study provided evidence that there was little variation in symptoms due to grades of acute rejection or pulmonary infection, as evidenced by the lack of clinically significant differences in frequency or type of symptoms and the low sensitivity and specificity. Instead the results substantiate the complexity and ambiguity of the nature of symptoms reported after lung transplantation.

The qualitative study revealed that LTRs respond to acute rejection as individuals respond to other health threats, by formulating their own perceptions of symptoms and attributions for their episodes of rejection.¹⁴⁻¹⁷ Also, like patients with underlying pulmonary disorders, such as asthma and chronic obstructive pulmonary disease,^{6,7,40} LTRs' unique perceptions and descriptions of their symptom experiences may be of use in the detection and management of acute rejection episodes.

The core variable *striving for normalcy* explained why LTRs sought transplantation and held inflated, unrealistic expectations that accounted for the variation in the symptom responses they exhibited and the dialectics they faced at each stage of the process. These findings were consistent with reports that other solid organ transplant recipients harbor unrealistic expectations for a *second chance at life* and their behaviors often reflect a refusal to recognize their vulnerability.⁴¹⁻⁴³ The individuals' response to symptoms, eg, is recognized as a component of the overall symptom experience and as such plays a prominent role in illness detection.^{11,13,44,45} The term *symptom response* refers to the behaviors that LTRs manifest after symptoms alert them to a potential health threat.³¹ The symptom responses described in this study varied between stages and reflected the aspect of *striving for normalcy* that corresponded to each stage. Since the symptom response provides insight regarding how LTRs determine whether symptoms are familiar, how they should be managed, and whether actions such as contacting the transplant team are required, knowledge of the symptom response can be used to develop strategies to enhance detection and prompt reporting appropriate to each stage of the process.

The interpretive process of the symptom experience associated with the development of acute rejection was seen to culminate in the development of insight when an LTR realized that normalcy within his/her illness was achievable if one recognized his/her role in promoting normalcy by relinquishing some autonomy and embracing more of a reciprocal decision-making relationship with the team. The notion that individuals share responsibility for managing their illness and disabilities with clinicians has been described by Corbin and Strauss⁴⁶ as the work of managing a chronic illness. Knowing that LTRs are striving for normalcy should prompt clinicians to convince LTRs that participating in the work, by monitoring their conditions every day, paying attention to changes from their normal condition, and reporting changes promptly to

the team, is a way to work effectively on their own behalf.

Other models of chronic illness⁴⁷⁻⁴⁹ point out several paradoxes that arise in the illness experience that are consistent with the findings in this study. First, that to live with wellness in the foreground (normalcy within illness), although sickness is distant, the management of the disease must be foremost. That is, chronic illnesses, including posttransplantation conditions, require attention in order not to have to pay attention. LTRs who developed insight about symptoms and the threat of rejection were able to verbalize an understanding of such paradoxes, and when they faced setbacks such as rejection, they were likely to resume a proactive role and perform their part of the reciprocal work.

Risk of including weak findings

All findings were deemed worthy of inclusion in the integrated model. The findings were complemented by the related literature, and each had strong within-method support.

Step 5: Constructing the integrated conceptual model

Pertinent findings from both studies are summarized in Table 4. To organize the pre-

sentation and to emphasize that findings were combined at the conceptual level, the findings were listed and the study source (qualitative or quantitative) indicated. While correspondence between the quantitative and qualitative findings was not the goal of triangulation, in this study, the quantitative findings that symptoms of rejection lacked certainty, overlapped with symptoms of infection, and were ambiguous and complex, converged with the qualitative findings that characterized the discovery stage.

Results of the qualitative study included the findings that converged between methods as well as its unique findings. Therefore the substantive theory of the symptom experience associated with the threat of rejection (Table 3) reflected both the physiologic and interpretive dimensions and became the ultimate integrated conceptual model. This model provides a complete understanding of the overall symptom experience associated with the threat of rejection and points to new ways to promote more effective patterns of symptom recognition and reporting. Convergence was not a criterion for inclusion in the final model. Nor did convergence indicate redundancy because the findings were reliable and valid only because the proper methods were employed to obtain them.

Table 4. Study findings across methods*

Findings	Quantitative	Qualitative
Symptoms of rejection are complex and ambiguous	•	•
Symptoms of rejection and infection overlap	•	•
No symptoms are unique to acute rejection	•	•
The interpretive symptom process is dynamic and comprises 4 stages		•
Each stage has characteristic elements (initiating event, symptom response, dialectic)		•
Striving for normalcy is the core process		•
Aspects of striving for normalcy account for the variation between stages		•

*Shading indicates full convergence of findings between methods. No shading indicates uniqueness of findings.

IMPLICATIONS FOR PRACTICE

LTRs facing the threat of rejection need to be able to reconcile their unrealistic expectations for normalcy with a more realistic view of life after transplantation in order to be able to develop insight about detecting and reporting symptoms. Because they strive for normalcy is seeded before transplant, it directs us to intervene early, during the lung transplant candidacy stage, to assist lung transplant candidates to comprehend the need for continued illness management and the threat that untreated rejection poses. Clinicians need to continually remind LTRs that it is common to feel elated after transplantation and during prolonged rejection-free periods, but this reaction has the potential to threaten the health that they are so adamantly expecting to achieve and is better replaced with one of guarded optimism.

Knowledge that LTRs' strive for normalcy evolves over time, from furtive hope during the naïve stage to qualified hope during the insight stage, also directs us to intervene using stage-specific approaches. The overall aim is to assist LTRs to enter the stage of insight as early as possible.

Additionally, an awareness of the dialectics that exist during each stage also opens up opportunities for interventions to reconcile the views and achieve synergy. The Hegelian dialectic provides a way to resolve tension between 2 apparently contradictory views by establishing elements of truth on both sides rather than disproving one view over the other.⁵⁰ Clinicians need to acknowledge these differing realities and begin a dialogue about the 2 opposing views, the thesis and the antithesis, in order to assist LTRs to understand them as a unified whole, the synthesis.

As revealed in the quantitative study, LTRs need to be explicitly told that all pulmonary symptoms, including cold symptoms, cough, shortness of breath, fatigue, fever, activity intolerance, or declines in spirometry, have been associated with rejection and infection alike, but there is no one symptom or symptoms that forewarn of rejection. Clinicians

need to teach LTRs that symptoms of rejection commonly overlap with symptoms of other pulmonary complications, and symptoms are not necessarily consistent between episodes. The qualitative findings revealed that during the stage of discovery tension exists between the LTRs' desire for certainty regarding the cause of their symptoms and the ability to tolerate the ambiguity that actually surrounds symptoms of rejection. Therefore, to achieve synergy for the dialectic of certainty versus ambiguity, LTRs should be assisted to recognize disparate pulmonary symptoms that indicate any variation from their normal condition and report changes to the transplant to reduce the likelihood of having rejection or other serious complications go undetected.

IMPLICATIONS FOR FURTHER RESEARCH

The purpose of integrating the findings of these studies was to expand the repertoire of research-based clinical strategies for enhancing detection of rejection after lung transplantation. Further research is needed to discover factors that influence LTRs' abilities to achieve the insight stage and to develop and test stage-specific interventions that culminate in more effective patterns of symptom recognition and reporting, and thus detection of rejection.

Furthermore, there is a need for additional descriptions of how others integrate findings of multimethod studies, including conceptual triangulation methods, particularly in situations where the goals of integration differ from the work reported by Foster¹⁹ and the work presented here. For instance, if the goal of integrating the findings is to develop an instrument, or formal theory, rather than to identify areas for possible intervention, it is important to determine if the integration process differs.

Additionally, since the findings from the multimethod studies described here happened to converge, the theory derived from the qualitative study adequately reflected the

quantitative findings. Consequently, the integration process described was fairly straightforward. However, in other mixed-method studies with less convergent or even divergent findings, the process of constructing an

integrated model may be more complicated. Further applications of conceptual triangulation are needed to explore its usefulness for integrating the diverse mixed-method findings of nursing research.

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