Introduction

Patient centered care (PCC) is the provision of care that takes into consideration and is responsive to the values, beliefs, and preferences of an individual (Institute of Medicine, 2001; Berwick, 2009). It seeks to garner patients' opinions about the various types and options for care. The individual is an instrumental part of the decision making process, and is involved in the design of their own plan of care (Institute of Medicine, 2001). This approach to delivering patient care presents a perspective from which the health care provider is viewed as being "guest in the lives" of patients rather than gatekeepers to health care resources (Berwick, 2009). Accordingly, the care approach is identified in conjunction with the patient (Lapum et al (b), 2012) and tailored to reflect their individual preferences (Berwick, 2009). This approach transitions away from health care providers unilaterally selecting and implementing care options (Fredericks et al, 2012). Furthermore, a critical point is that PCC is dynamic requiring it to be refined as patients evolve in their illness (Lapum et al. (b), 2012) and as such, with the applicable therapeutic interventions based on their state of health. Within the literature, the idea of PCC has been referred to as *client*, *person*, and *patient*-centered care (Institute of Medicine, 2001; Hobbs, 2009; Lapum et al. (b), 2012). Though the name may differ the concept of what it is to be patient-centered does not (Institute of Medicine, 2001; Hobbs, 2009).

Across several clinical settings, PCC has been implemented with varying degrees of success (Oates et al, 2000). This variability of success is most evident in settings that are characterized by either same day hospital admissions or very short periods of hospitalization (24-48 hours) (Oates et al, 2000). The effectiveness of PCC

interventions in reducing the onset of infections and rehospitalisation have been demonstrated with populations receiving minimally invasive procedures such as dialysis, plastic surgery, laparoscopic, refractive eye surgery, or skin grafting (Dawn & Lee, 2004; Oates et al, 2000). However, the effectiveness of PCC interventions delivered to patients with extended hospitalizations or who have undergone an invasive surgical procedure such as heart surgery have not been fully demonstrated in practice. This may be due to the acuity of the illness of the individual, which may lead to the perception that PCC interventions may not be an appropriate treatment approach for patients undergoing complex procedures.

This paper will make an argument in favor of using PCC interventions to support individuals undergoing cardiovascular surgical procedures. For the purposes of this paper, PCC interventions will be defined as dynamic and individualized care approaches related to support, education and counselling that are designed based on patients' preferences. Specifically, considerations for designing and evaluating PCC based cardiovascular surgical interventions will be presented.

Background

Cardiovascular surgery is a surgical intervention that is provided to increase blood flow throughout the body; repair or replace injured areas of the heart; allow for device insertion to correct heartbeats; or transplantation of a damaged heart. Cardiovascular surgical procedures can encompass a number of techniques that include: coronary artery bypass grafting, valvular repair or replacement, transmyocardial laser revascularization, aneurysm repair, ventricular assist device implantation, and/or heart transplant (Heidenreich et al, 2011). Typically, during cardiovascular surgery the

chest is opened in the operating room and the heart may or may not be stopped (i.e. patient is either placed on a cardiopulmonary bypass pump while the surgery is proceeding or the surgery can occur off-pump) to allow the surgeon to perform the procedure. To open the chest, the sternum is cut in half and spread apart. Following surgery, an individual is at increased risk of infection, bleeding from the incision sites, abnormal heart functioning, blood clots, stroke, and blood loss (Finks et al, 2011). As well, approximately 30% to 40% of cardiovascular surgery patients experience some form of psychological depression immediately after surgery which can persist and/or exacerbate up to 3 months post-operative (Tully and Baker, 2012). In addition to medical care, a range of interventions related to counselling, support and education are required to facilitate patients' recovery.

The use of PCC interventions in helping to reduce onset of infections (Cals et al, 2009), bleeding (Subherwal et al, 2009), blood clots (Zolnierek and DiMatteo, 2009), stroke (Moser et al, 2006), and depression (Cooper et al, 2013) has been demonstrated across varied populations. As such, this evidence should be considered when designing, implementing, and evaluating care for patients following cardiovascular surgery. The following section outlines various PCC interventions that should be considered while designing and implementing a patient's overall plan of care following cardiovascular surgery. The paper concludes with a brief overview of various strategies that can be used to evaluate the effectiveness of PCC interventions.

Considerations and recommendations for designing and implementing PCC Interventions

Patient centered care interventions can be designed and implemented both within the post-operative cardiovascular surgery setting and during an individual's home recovery through the use of a variety of strategies. One chief strategy is that of effective communication styles in which the health care provider, specifically, the nurse uses open ended questions to identify patients' concerns and to collaboratively work with these individuals to design and implement treatments aimed at addressing issues identified. Typically, the nurse will present the individual with a list of evidence based strategies that can be used to address an identified concern and then together with the individual, select the most feasible approach for implementation. As well, responsive and compassionate communication styles are important to demonstrate the nurses' capacity for empathy and respect for the patient's concerns. Key characteristics that nurses will need to effectively deliver PCC interventions include active listening, use of thought provoking questions, ability to engage individuals in conversation, and use of strategies to maintain focus and dialogue such as maintaining eye contact, ensuring individual is comfortable, and having the ability to negotiate content. Using effective communication strategies can facilitate holistic approaches to patient care (Lapum et al, (a), 2012) in which both psychological and physical dimensions of recovery from heart surgery are considered (Sorensen and Wang, 2009; Karlsson et al, 2010). As such, these strategies will assist nurses to design and implement PCC interventions that address patients' complex needs.

Nurses should consider additional interventions such as visual images or analogies, as these have been shown to significantly improve individuals' comprehension of information, retention of material, and recall, over time (Robinson et

al, 2008). Evaluation of media resources (e.g. print, internet, and telephone communication) have been shown to have a supportive mechanism that enhances coping and adherence (Robinson et al, 2008). Both visual images and analogies are examples of decision aids that are typically used to help individuals understand clinical information, and to use this information to make informed choices related to their care (Barry and Edgeman-Levitan, 2012).

Within the cardiovascular surgery setting, the use of open communication strategies and decision aides during PCC interactions should ideally begin immediately following surgery or when the individual is able to consciously interact with their nurse. Furthermore, these strategies should be consistently practiced both during and after a patient's hospitalization. This may not always be possible due to factors relating to nurses' workload, lack of time, their inability or lack of training related to effectively engaging in PCC skills, and/or their general unwillingness to change practice. However, PCC interventions are important to reduce cardiovascular surgery post-operative complications, length of hospitalizations, re-hospitalizations, and health care expenditure (Ford, Rolfe, Kirkpatrck, 2011). Therefore, although some of these issues are beyond nurses' ability to change, health care organizations should consider supporting nurses as they engage in PCC related activities. This support can be in the form of training sessions focused on open communication strategies and using decision aids into everyday clinical practice, reorganization of workload to allow for active and ongoing engagement in PCC based strategies, and provision of one-on-one assistance to nurses who are hesitant to engage in PCC interventions.

Evaluation of PCC interventions in the CVS setting

Good clinical practice guidelines (Martegani, 2008) recommend that following the implementation of an intervention, an evaluation of its effectiveness in producing desired outcomes should be examined. A potential approach is the use of a quasi or experimental study should be designed in which possible outcomes related to risk of infection, bleeding from the incision sites, abnormal heart functioning, blood clots, stroke, blood loss, psychological symptoms and self-care should be examined. Another potential approach is engaging in a qualitative research study that is integrated into these evaluations to assist practitioners better understand the contextual and individual reasons that certain PCC interventions are effective or ineffective. Evaluation of PCC interventions will determine effectiveness in preventing and/or reducing these complications, as well as add to the body of literature about evidence-based and PCC interventions in the cardiovascular surgery population (Martegani, 2008).

To determine intervention effectiveness, a clear definition, based on both theoretical constructs and empirical evidence, should be adopted by clinical staff (Epstein et al, 2005). In addition, Epstein et al's suggestion applies to researchers who are conducting evaluation studies. It is these definitions and interpretations of PCC that data collection tools should be designed around. Epstein et al. also suggest that measurements should be taken on each individual engaged in the PCC interaction (nurse and patient), as well as the actual interaction between them. Furthermore, data should be collected on the setting in which the PCC interaction occurred, as noise or other distractions may invalidate the effectiveness of the PCC intervention. Additionally, the qualitative data may explicate some of the variables that influence the implementation of PCC

interventions and assist in the identification of nurse or patient attributes that influence effectiveness. Data collection instruments should be reliable and valid; and the long term effects of the PCC intervention should be integrated into the data collection plan. Since the first 3 months are critical for the cardiovascular surgical patients' recovery, extended data collection should last up to 12 weeks. Finally, as PCC interventions are designed based on the values, beliefs, and preferences of the individual, these factors should be explored, measured, and included in data analyses to determine their possible effects on outcomes of interest.

Conclusion

There is an underdeveloped body of literature related to the design and implementation of PCC interventions in the cardiovascular surgical population. Alongside of this, the use of PCC interventions is underused in practice possibly due to the illness acuity of the cardiovascular patient coupled with the short hospital length of stay. Moreover, practitioners may have a lack of understanding on how to design and implement PCC interventions with the cardiovascular surgical population. Based on the success of implementing PCC interventions in other populations, it is timely to consider how care approaches in the cardiovascular surgical population can be tailored to patients. Future research is required to explore and evaluate practitioners' understanding of PCC interventions, as well as the design and implementation of these interventions in the cardiovascular surgical population.

Key points

* Patient centered care interventions can be designed and implemented both within the post-operative cardiovascular surgery setting and during an individual's home recovery through the use of a variety of strategies

* Effective communication styles in which the health care provider, specifically, the nurse uses open ended questions to identify patients' concerns and to collaboratively work with these individuals to design and implement treatments aimed at addressing issues identified

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