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Effects of patient-centered care (PCC) as interventions on patient outcomes: A systematic review

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Abstract---Introduction: In the current era of globalization where healthcare organizations are becoming more focused on patient outcomes due to the increasing demand for higher-quality health services, it is necessary to conduct research on the effects of PCC interventions on patient outcomes. Methods: A Systematic review. Search was conducted on several databases like Google Scholar, PUBMED, and Science Direct. Inclusion criteria are PCC intervention which is depicted as a partnership between health care providers and patients. Studies are analyzed based on methodology, type of interventions, outcomes, and effects of the interventions. Eleven tests fulfilled the inclusion criteria. Results: Most of the patient outcomes analyzed in this systematic review show a significant effect on a patient with PCC interventions (72.4%). Length of stay, surgery delay, patient satisfaction, cost of treatment, readmission rate, perception of nursing care, and quality of service are among the outcomes investigated. Other clinical outcomes were also studied, including

perioperative complication, post-operative pain level, anxiety level, functional status, quality of life, blood pressure, lipid blood level, and hemoglobin A1c. Only a few outcomes were proven insignificant (27.6 %). Conclusions: The PCC intervention allows the patient to be actively involved in their care. This systematic review concluded that PCC intervention has significant effects and multiple benefits on patient outcomes.

Keywords--PCC, interventions, patient outcomes.

Introduction

Since the Institute of Medicine (IOM) identified Patient-Centered Care (PCC) as one of six goals for enhancing healthcare quality in the twenty-first century (Medicine, 2001), many healthcare organizations have adopted PCC as a fundamental component of their strategic mission and values (Rathert et al., 2013). The concept of PCC has its roots within a holistic paradigm, which suggests that people need to be seen in their bio-psychosocial entity (Henbest & Stewart, 1990) and draws medical attention to patients' personal identities (Olsson et al., 2014). Although many proposed definitions explain the concept of PCC, there is no accepted definition globally. Compared to standard biomedical perspectives, the key component of PCC is a comprehensive perspective on the patient's position, their own understanding and experience of their situation, and their participation in the decision-making.

According to Australian Commission on Safety and Quality in Health Care (ACSQHC) (2010), PCC is an innovative approach to healthcare planning, delivery, and assessment based on mutually beneficial partnerships between healthcare providers, patients, and families. Patient- and family-centered care is appropriate for patients of all ages and can be provided in any healthcare setting. Recent research has shown many benefits to patient-centered care, broadly categorized as care experience, clinical and operational benefits. Studies show that when healthcare administrators, providers, patients, and families work in partnership, the quality and safety of healthcare rise, costs decrease, and provider and patient satisfaction increase (ACSQHC, 2010).

Therefore, in the current era of globalization, where health care organizations are becoming more focused on patient outcomes due to the increasing demand for higher quality health services, it is necessary to research PCC interventions' effects on patient outcomes.. This systematic review aims to explore the effects of PCC as an intervention on patient outcomes. The target population includes adults given PCC interventions which depicted as a partnership between health care providers and patients.

Method

Study Design

A systematic review was conducted to determine the effect of PCC interventions in

improving patient outcomes. The PRISMA framework was used to ensure an accurate and complete assessment during the review process (Figure 1) (Moher et al., 2009). Following that, research sampling, data abstraction, outcome assessment, data synthesis, and data analysis will be covered in greater depth.

Search method

Searches were conducted on Google Scholar, Pubmed, and Science Direct in August 2022. Inclusion and exclusion criteria were formulated to decide on potential references for review and discard irrelevant references. The search strategy uses keywords such as "patient-centered care," "person-centered care," and "patient-centered care and outcomes." Subsequently, further searches were conducted to narrow the review by focusing on relevant studies and yield a manageable number of abstracts. The last search terms were "patient-centered" or "people-centered" and "intervention." This combination of search terms results in more relevant research to be studied.

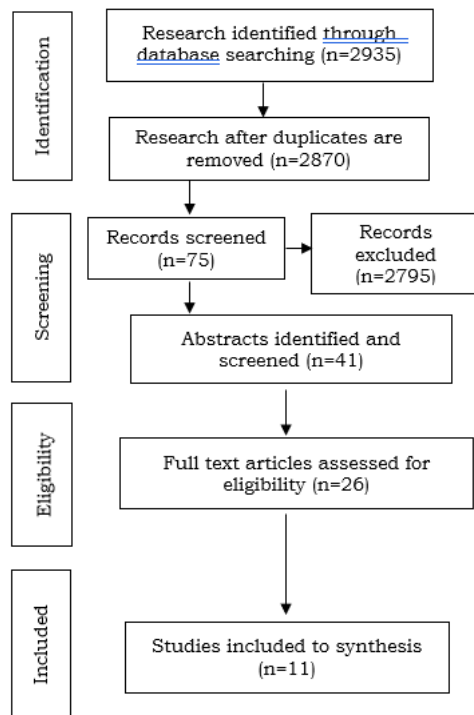


Figure 1. Flow diagram of the selection process for review based on PRISMA (Moher et al., 2009)

Study Selection

The inclusion criteria are as follows:

- The sample is representative of adult patients (≥ 18 years) who received PCC intervention during hospitalization;

- The core components of PCC (patient-health care provider partnerships) must be identified in the study;
- Assessed patient outcomes related to the quality of care during hospitalization;
- Study designs include quasi-experimental and experimental or randomized clinical trials (RCTs).

The exclusion criteria are as follows:

- Studies in which no intervention is performed;
- Interventions that do not have a control or comparison group;
- Interventions that do not include patient-health care provider partnerships.

Screening

Studies were compared by the author's name, location, and specific intervention details. Thus, several reports from the same study were identified.

Data extraction

From each eligible article, the authors extracted the following information: author, year, title, objectives, inpatient/outpatient location, study design and methods, sample size, intervention type, outcomes assessed, and results.

Data analysis

Descriptive statistics are used to describe the characteristics of the research included in this systematic review; to describe the characteristics of the study participants comprising the selected sample across the study, and to identify elements of PCC interventions that have been shown to be effective in producing changes in quality of care during hospitalization.

Discussion

Study Characteristics

11 studies that met the inclusion criteria were conducted between 2008 and 2022. 2 studies used an experimental design, 2 studies used a retrospective non-experimental design, and 7 studies used a quasi-experimental approach to describe and/or evaluate PCC interventions. All studies consisted of two groups, one described as the experimental group and the other as the control group. This study involved a total of 4,743 study participants who were all patients. The studies included in this systematic review consisted of 3 studies in Sweden, 2 in the United States, 1 in China, 1 in Ireland, 2 in Indonesia, 1 in the Netherlands, and 1 in Pittsburgh.

Characteristics of Study Participants

Across all studies, the median age of participants was 61 years. On average, the male: female ratios were comparable, with slightly higher percentages for males

(51%) and females (49%). The most common diagnoses were orthopedic (36.3%), gastrointestinal surgery (18%), and heart failure (18%). Other diagnoses consisted of cesarean section, diabetes mellitus, and cataracts.

PCC Intervention Characteristics

In general, PCC interventions involve education or counseling that involve and provide opportunities for patients to adjust the intervention content and/or activities according to their wishes, needs, and preferences. The description of the intervention process is not well explained in some studies. In general, PCC interventions address the topic of quality performance, treatment management, and the need for follow-up with physicians and/or specialists. Several PCC model interventions, such as the Planetree and Gothenberg models, were also implemented. The most commonly used intervention method is individual delivery (72%), with a verbal format, or delivery without a medium (81%). Most of the interventions (72%) were structured and delivered before discharge or while the patient was still in the hospital (100%).

Outcome

Patient outcomes assessed varied, including length of stay, surgery delay, patient satisfaction, cost of care, readmission rate, professional performance, structural aspect of chronic care management, perception of nursing care, and the quality of service. Other clinical outcomes were also studied, including perioperative complication, post-operative pain level, anxiety level, functional status, quality of life, blood pressure, lipid blood level, and hemoglobin A1c. Almost all patient outcomes showed a significant effect in patients with PCC intervention (72.4%) except in studies that assessed the incidence of venous thromboembolism, urinary tract infections, hemoglobin A1c and cholesterol levels which did not show a significant effect. In addition, functional status, quality of life, and patient readmission rates also did not show a substantial impact from the application of PCC interventions.

This systematic review aims to explore the effect of patient-centered care as an intervention on patient outcomes. The outcomes assessed are pretty diverse but involve three major issues: aspects of patient experience, clinical benefits, and hospital operations. The results show that in recent years, few studies have been conducted to evaluate the effectiveness of PCC interventions administered during the hospital stay. This happens because there is no globally agreed definition to define PCC, and it isn't easy to define benchmarks for successful PCC implementation. The effectiveness of PCC interventions was noted in almost all studies in this systematic review (72.4%). This is consistent with the results of several previous studies that proved the effect of PCC intervention on patient outcomes.

Interestingly, the intervention studies that reported statistically significant findings concerning the effectiveness of PCC interventions contained populations diagnosed with acute conditions such as orthopedic surgery, gastrointestinal surgery, cesarean section surgery, and cataracts. Other studies that report a small effect of PCC suggest that PCC interventions may not be beneficially applied

to individuals diagnosed and living with chronic disease, as these individuals may have developed self-care behaviors over time and may have formed unique long-term relationships with their healthcare providers. Thus, PCC interventions may be more effective when administered to individuals with acute conditions. These individuals will require short-term health care support where PCC interventions can be performed. Whereas in patients with chronic conditions such as heart failure and diabetes mellitus, although the effect of other interventions is not significant, the outcome of patient length of stay can be reduced. This can occur because nurses discuss discharge plans with patients at pre-admission visits and help patients understand what to expect. Patients need to prepare for their return. The pre-admission visit results in a written health care plan that the patient approves and, if applicable, their relatives. So it can shorten the length of stay. Another insignificant outcome occurred because PCC interventions such as those described here are difficult to implement. After all, they involve a large group of staff and affect the established culture and routines in the hospital. Interventions should be devised collaboratively by patient representatives, doctors, nurses, and all other health professionals, such as physiotherapists and occupational therapists, in partnership with the research team to enhance the possibilities of success. The aim is to form a working consensus to facilitate the implementation of PCC in hospitals. Performance is expected to be difficult, which was confirmed in a pre-intervention study of resistance to change among staff. Therefore, it is advisable to recruit study nurses to oversee the implementation process and support staff when needed.

Table 1
Literature Summary

No	Author and Year	Study Design	Sample Size	Intervention	Outcomes Reported	Result
1	Liu et al (2022)	Cohort retrospective study	385 patients	Interventions include patient evaluation and education, respiratory care, volume maintenance, nutritional support, blood and thrombus treatment, multimodal analgesia, sedation, and tube treatment.	1. delay Surgery 2. LOS 3. Perioperative complications	<ul style="list-style-type: none"> • Perioperative complications (p<0,05) • LOS (p <0,05) • Surgery delay (p <0,05)
2	Donegan et al (2021)	True Experimental Study	183 patients	<p>The PCC principles, which were adopted throughout the project, ensured that the entire team recognized the following aspects:</p> <ul style="list-style-type: none"> • PCC begins with the person's perspective on their life. • PCC requires a creative approach that asks what is possible, rather than assuming a common understanding and limiting oneself to what is available • PCC considers all resources available to the patient 	1. LOS	<ul style="list-style-type: none"> • The decreased average length of stay of medical patients in the pre-discharge unit by 41%, from 40.64 days in 2017 to 23.97 days in 2019 • The decreased average length of stay by 13% for patients over 65 years admitted to an acute hospital, from 55.10 days in 2017 to 48.09 days in 2019 • The number of patients discharged from pre-discharge units increased from 18% in 2017 to 47% in 2019. • The project resulted in a reduction in the average length of stay in the pre-discharge unit by 16 days. More than 47% of patients are now discharged from home compared to 18% in 2017.
3	Arrif Zulhani & Rossa,	Quasi Experimental Study	44 patients	The intervention or treatment group was briefed on PCC's description, benefits, and application. The PCC	1. Pain level	<ul style="list-style-type: none"> • Pain level (p <0,05)

	(2020)			team (obstetricians, anesthesiologists, nurses, midwives, and pharmacists) also received the PCC module before the team visit. The intervention was carried out for the entire time the patient was hospitalized for about 3 to 4 days		
4	Sjarifudhin & Maria Rosa (2018)	Quasi-Experimental Study	60 patients	The implementation of PCC is divided into briefings and visits. The PCC team conducts the briefing process by conducting FGD to determine the therapy for each patient based on the patient's medical record. Each profession provides input according to its professional competence to help doctors determine the best treatment, reduce the risk of unwanted events, and consider each patient's particular conditions and needs. Then the PCC team will visit each patient. All PCC team members provide input/education to patients directly according to the patient's condition and needs. The visitation process for cataract surgery patients is carried out before the patient undergoes surgery, including introduction, education, consultation, and informed consent. The PCC team consists of ophthalmologists, nurses, and pharmacists	1. Anxiety level 2. Patient Satisfaction	<ul style="list-style-type: none"> Effect size PCC obtained a strong effect (2.59 and 4.31) in reducing anxiety Medium effect size (0.56) on increased satisfaction.
5	Wick et al., (2015)	Quasi-Experimental Study	310 patients	PCC design pathway that includes preoperative education, mechanical bowel preparation with oral antibiotics, chlorhexidine bath, multimodal analgesia with epidural or block, restricted intravenous fluid protocol, early mobilization and resumption of oral intake	1. LOS 2. Cost of care 3. Patient experience 4. Surgical site infection 5. Venous thromboembol	<ul style="list-style-type: none"> LOS (p <0,05) Cost of care (p <0,05) Patient experience (p <0,05) Surgical site infection (p <0,05) Venous thromboembolism (p >0,05)
					6. Urinary tract infection	<ul style="list-style-type: none"> Urinary tract infection (p >0,05)
6	Ulin et al., (2015)	Quasi-Experimental Study	248 patients	The Gothenburg patient-centered care model (gPCC) provides a structured approach to people-centered care, in which the patient is a partner in planning care both during the hospital stay and in primary care and municipal care services.	1. LOS	<ul style="list-style-type: none"> LOS (p <0,05).
7	Olsson et al., (2014)	Quasi-Experimental Study	266 patients	gPCC interventions are used to provide care systematically, combining evidence-based guidelines and clinical knowledge with the individual prerequisites of patient and care providers forming partnerships. gPCC care is specifically designed to identify each patient's resources and barriers and to guide care. A comprehensive narrative is obtained from each patient, covering their daily lives, resources, motivations, and goals.	1. LOS 2. ADL	<ul style="list-style-type: none"> LOS (p <0,05) ADL (p > 0,05)
8	Ekman et al., (2012)	Quasi-Experimental Study	248 patients	The usual care group (control) was recruited according to predetermined criteria to map out regular CHF care and assess its outcome in five designated hospital wards. Based on the mapping, a panel of in-house physicians and researchers developed measures to align usual care with basic PCC principles. These steps were then incorporated into the study protocol to guide treatment procedures in the same five wards.	1. LOS 2. ADL 3. HRQL 4. Readmission	<ul style="list-style-type: none"> LOS (p <0,05) ADL (p <0,05) HRQL (p >0,05) Readmission (p >0,05)
9	Schouten et al., (2010)	Quasi-Experimental Study	1861 patients	The intervention site was asked to form a multidisciplinary improvement team consisting of medical personnel,	1. Patient's outcomes (hemoglobin)	<ul style="list-style-type: none"> Systolic blood pressure (p <0,05) HDL level (p <0,05)

			nurses, and health professionals from outpatient clinics and general practices in the area. During the project, four national meetings (including one initial meeting) were held to inform the participating teams about the best available evidence on diabetes (based on national and international guidelines), best practices, and best ways to implement them. To achieve improvement, the team is directed and supported to: change the professional performance and organization of care, introduce patient self-management, and introduce a system for registering clinical parameters. However, each team is free to focus on a specific quality improvement intervention depending on the routine	A1c, cholesterol, blood pressure, body weight, lipid blood level, dan smoking status) 2. Professional performance 3. The structural aspect of chronic care management	<ul style="list-style-type: none"> • Haemoglobin (p< 0,001) • Cholesterol (p< 0,001) • Lipid blood level (p< 0,001) • Professional performance (p <0,05) • The structural aspect of chronic care management (p <0,05) 	A1c	
10	Stone, (2008)	Retrospective comparison of non-experimental study	869 patients	The Planetree PCC care model provides a framework and operational guidance on how to implement programs and processes in 10 core components: (1) human interaction, (2) architectural and interior design, (3) food and nutrition, (4) patient and family education, (5) family involvement, (6) spirituality, (7) human touch, (8) healing arts, (9) complementary/alternative therapy, and (10) healthy community in the intervention group.	1. Patient Satisfaction 2. Clinical outcome (LOS and readmission) 3. Cost of care	<ul style="list-style-type: none"> • Patient satisfaction (p <0,05) • LOS (p <0,05) • Cost of care (p <0,05) 	(p
11	Wolf et al., (2008)	True Experimental Study	36 patients	Participants randomized to the PCC group were called 24 to 48 hours prior to scheduled hospital admission by nurses trained in providing PCC and interviewed to determine their expectations during their hospital	1. Patient Satisfaction 2. Quality of care 3. Perception of nursing care	<ul style="list-style-type: none"> • Patient satisfaction (p <0,05) • Quality of care (p <0,05) • Perception of nursing care (p >0,05) 	
				stay, identify concerns, and answer questions. The same nurse provided care during hospital admission. The regular care group received the traditional care provided routinely in a hospital setting.			

In addition, the intensity and type of the interventions studied varied, both in terms of approach and tactics. This systematic review is also limited by the quality of retrieved studies and recorded information. It is thought that multiple interventions might be useful but on the other hand, it is difficult to ascertain which components or which combinations of components produce the measured outcomes. Therefore, more research with a more careful and specific design is needed (Goldfarb et al., 2017; Olsson et al., 2013).

Conclusion

PCC interventions allow patients to be actively involved in their care. Patients are also considered partners of the healthcare team. Through this systematic review, it was concluded that the PCC intervention provided many benefits for patient outcomes. It is recommended that in the future, it is necessary to design more structured PCC interventions to make the implementation easier. Furthermore, further research on the role of culture and how it impacts decisions made during PCC patient–health care interactions are also needed.

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