

A Nurse-Led Educational Program and Patient Information Booklet to Enhance Chemotherapy Side-Effect Management and Self-Care: A Quality Improvement Project

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Research Article

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Additional Declarations: No competing interests reported.

Abstract

Background:

Chemotherapy-related side effects can adversely affect patient outcomes and quality of life when not appropriately managed. A nursing audit conducted in an oncology department identified gaps in staff nurses' knowledge regarding chemotherapy side-effect management and deficiencies in patient education practices.

Aim:

To improve staff nurses' knowledge regarding chemotherapy and its associated side effects through a structured educational program and to enhance patient self-management through the provision of a patient information booklet.

Methods:

A quality improvement project was conducted among 55 oncology staff nurses in the Oncology Block of St. John's Medical College Hospital. Baseline audit findings revealed deficiencies in chemotherapy-related knowledge and patient education practices. A nurse-led educational program covering chemotherapy medications, side effects, symptom assessment, management strategies, and patient counselling was implemented. A patient information booklet titled *Coping with Chemotherapy* was developed and distributed. Nurses' knowledge was assessed using a structured questionnaire before and five days after the intervention. Chemotherapy-related readmissions were monitored during a six-week post-intervention period.

Results:

The mean knowledge score significantly increased from 8.80 ± 2.97 in the pre-test to 13.11 ± 1.31 in the post-test ($t = 16.29$, $p < 0.001$). During the six-week post-intervention period, only one unplanned chemotherapy-related readmission was recorded, attributable to fever. The intervention was successfully integrated into routine workflow without reported staff burden or disruption to nursing schedules.

Conclusion:

The nurse-led educational program significantly improved staff nurses' knowledge regarding chemotherapy and its side effects. The accompanying patient information booklet strengthened patient education efforts and supported self-management practices. Ongoing educational initiatives may contribute to improved oncology care and reduced treatment-related complications.

INTRODUCTION

Chemotherapy is associated with various side effects that can significantly affect patient well-being if not managed appropriately. Patients receiving chemotherapy often experience symptoms such as nausea, vomiting, fatigue, mucositis, diarrhoea, constipation, and infections, which may result in reduced quality of life and unplanned hospital readmissions. According to the World Health Organization (WHO), understanding chemotherapy side effects is vital to prevent unnecessary hospitalizations, minimize morbidity, and improve patient quality of life.⁽¹⁾ Knowledge empowers patients to practice self-care, adhere to treatment regimens, and reduce treatment-related anxiety. Comprehensive pre-treatment counselling prepares patients mentally and behaviourally to manage treatment-related toxicities.⁽²⁾

A clinical audit identified suboptimal knowledge among staff nurses regarding chemotherapy and its side effects. Consequently, patients demonstrated limited understanding of home-based management of chemotherapy-related side effects, which was associated with increased readmissions. These findings highlighted the need for interventions aimed at strengthening nurses' knowledge and enhancing patient education practices.

Studies have reported that patients who receive adequate education regarding chemotherapy and its side effects demonstrate better self-management practices, improved treatment adherence, and reduced anxiety associated with cancer treatment.⁽³⁾ Furthermore, educational interventions delivered by healthcare professionals have been shown to enhance patients' knowledge and confidence in managing chemotherapy-related symptoms, thereby supporting safer and more effective self-care.⁽⁴⁾

SPECIFIC AIM

The aim of this Quality Improvement Project was to improve staff nurses' knowledge regarding chemotherapy and its associated side effects through a structured educational program and to enhance patient self-management of chemotherapy-related side effects through the provision of a patient information booklet. The project further sought to strengthen patient education practices and reduce chemotherapy-related readmissions within the oncology department.

CONTEXT

The Oncology Block at St. John's Medical College Hospital provides care to patients receiving chemotherapy through inpatient wards, oncology day-care services, and palliative care units. Effective patient education regarding chemotherapy side effects is essential to prevent complications and promote self-management. Variability in nurses' knowledge and patient counselling practices was identified as a barrier to optimal patient education, highlighting the need for a structured quality improvement initiative

RATIONALE

This project was based on the premise that improving nurses' knowledge regarding chemotherapy and its side effects would enhance the quality of patient education provided during treatment. Standardized patient education through a structured information booklet was expected to improve patients' ability to manage treatment-related side effects at home and potentially reduce avoidable chemotherapy-related readmissions.

METHODS

A nursing audit was conducted between January and February 2025 within the Oncology Block at St. John's Medical College Hospital—which comprises the Medical Oncology Ward, Surgical Oncology Ward, Oncology Day Care, and the Pain and Palliative Care unit—among 55 oncology staff nurses, and it revealed gaps in adherence to oncology standards of care related to chemotherapy administration and documentation. The audit demonstrated an overall adherence rate of 53.3% and highlighted the need for regular training programs to improve nurses' knowledge and clinical practice regarding chemotherapy side effect management. Additionally, deficiencies were identified in patient education concerning the home management of chemotherapy-related side effects, which was considered a potential contributor to chemotherapy-related readmissions.

PDSA CYCLE

Plan: A nursing audit identified deficiencies in nurses' knowledge regarding chemotherapy side-effect management and gaps in patient education practices.

Do: A structured educational program was delivered to oncology nurses, and the "Coping with Chemotherapy" patient booklet was developed and distributed.

Study: Nurses' knowledge was reassessed using a post-test questionnaire, and chemotherapy-related readmissions were monitored following implementation.

Act: Based on the positive outcomes observed, the educational program and patient booklet were incorporated into routine oncology patient education practices.

INTERVENTION

A nurse-led educational intervention was designed to improve staff nurses' knowledge regarding chemotherapy medications and the management of chemotherapy-related side effects. The intervention consisted of a structured teaching program covering common chemotherapy agents, adverse effects, symptom assessment, management strategies, patient counselling, and discharge education. In addition, a patient information booklet titled "Coping with Chemotherapy" was developed and distributed to provide standardized information on the prevention and management of chemotherapy-related side effects in home settings.

As this project was conducted as a quality improvement initiative aimed at improving routine clinical practice, Written informed consent was obtained from all participating staff nurses before their participation in the project. Participation by staff nurses was voluntary and data were analysed in aggregate form to maintain confidentiality.

The effectiveness of the educational intervention was evaluated using a one group pre-test and post-test approach. Staff nurses' knowledge regarding chemotherapy and its side effects was assessed before the intervention using a self-developed structured knowledge questionnaire. Following completion of the educational program, the same questionnaire was administered five days later to assess changes in knowledge levels.

RESULTS

Following the implementation of the nurse-led educational program, staff nurses demonstrated a notable improvement in their knowledge regarding chemotherapy and the management of chemotherapy-related side effects.

Table:1 Comparison of pre-test and post-test knowledge scores of staff nurses regarding chemotherapy and its side effects (n = 55)

Table 1

shows the comparison of pre-test and post-test knowledge scores of staff nurses regarding chemotherapy and its side effects. The mean knowledge score increased from 8.80 ± 2.97 in the pre-test to 13.11 ± 1.31 in the post-test, with a mean difference of 4.31. Paired t-test analysis revealed a statistically significant improvement in knowledge following the nurse-led educational intervention ($t = 16.29, p < 0.001$).

Variables	Pre-test		Post-test		Mean Difference	Paired 't' Value	p-value
	Mean	SD	Mean	SD			
Knowledge	8.80	± 2.97	13.11	± 1.31	4.31	16.29	< 0.001

Following the implementation of the nurse-led educational program and the distribution of the "Coping with Chemotherapy" patient booklet, primary clinical outcomes were tracked. Chemotherapy-related readmissions were monitored as a clinical outcome. During the 6-week post-intervention period, one unplanned readmission due to fever was recorded. Regarding balancing measures, the structured educational sessions were successfully integrated into the existing unit workflow. There was no reported staff burden or disruption to nursing shift schedules during the rollout of the project.

DISCUSSION

This Quality Improvement Project evaluated the effectiveness of a nurse-led educational program in improving staff nurses' knowledge regarding chemotherapy and its side effects. Following the

intervention, the mean knowledge score increased significantly from 8.80 ± 2.97 to 13.11 ± 1.31 ($p < 0.001$).

The findings of this quality improvement project demonstrated that a structured nurse-led educational program significantly improved staff nurses' knowledge regarding chemotherapy and its side effects. The improvement in post-test scores suggests that targeted educational interventions can effectively address identified knowledge gaps within oncology nursing practice.

The findings of the present project are consistent with previous research demonstrating the effectiveness of nurse-led educational interventions in oncology settings. Hu et al⁽³⁾ reported that educational interventions significantly improved treatment adherence, symptom management, and psychosocial outcomes among patients receiving chemotherapy. Improved nurse knowledge enhances the quality of patient counselling and promotes evidence-based management of chemotherapy-related side effects

The development and distribution of the "Coping with Chemotherapy" booklet provided patients with standardized information regarding self-management of chemotherapy-related side effects. Educational materials have been shown to improve patient understanding, self-efficacy, and confidence in managing treatment-related symptoms at home.

Arunachalam et al. found that patients with greater knowledge of chemotherapy adverse effects demonstrated better self-care abilities and were more capable of managing symptoms independently.⁽¹⁾ Providing written educational materials may reinforce verbal instructions and improve patients' confidence in self-management at home.

SUSTAINABILITY

To sustain the improvements achieved through this project, the educational program has been incorporated into ongoing staff development activities for oncology nurses. The patient information booklet has also been integrated into routine chemotherapy counselling practices within the department to ensure continued access to standardized educational information.

LIMITATIONS

- The project was conducted in a single oncology department, which may limit the generalizability of the findings.
- The sample size was relatively small.
- Patient satisfaction with the education provided was not evaluated.

Abbreviations

- IEC – Institutional Ethics Committee

- PDSA – Plan-Do-Study-Act
- QIP – Quality Improvement Project

Declarations

Ethics approval and consent to participate

The Institutional Ethics Committee (IEC) of St. John's National Academy of Health Sciences, Bengaluru, India, determined that formal ethics approval was not required for this project because it was conducted as a quality improvement project and did not involve the collection, use, or disclosure of patient information or identifiable participant data. The project was conducted in accordance with the principles of the Declaration of Helsinki and applicable institutional ethical requirements. Written informed consent was obtained from all participating staff nurses before participation. Participation was voluntary, and confidentiality of participant information was maintained.

Consent for publication

Not Applicable.

Availability of data and materials

The datasets analysed during the current study are available from the corresponding author upon reasonable request, subject to institutional policies and protection of participant confidentiality.

Competing Interests

The authors declare that they have no competing interests.

Funding

This study received no specific funding from any public, commercial, or not-for-profit organization.

Authors' contributions

VB- conceptualized and planned the study, developed the study materials and intervention, prepared the structured knowledge questionnaire, coordinated the study, conducted the data collection and data analysis, interpreted the findings, and drafted the manuscript.

MM contributed to implementation of the intervention and data collection. Both authors reviewed and approved the final manuscript.

Acknowledgements

Not Applicable.

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Figures

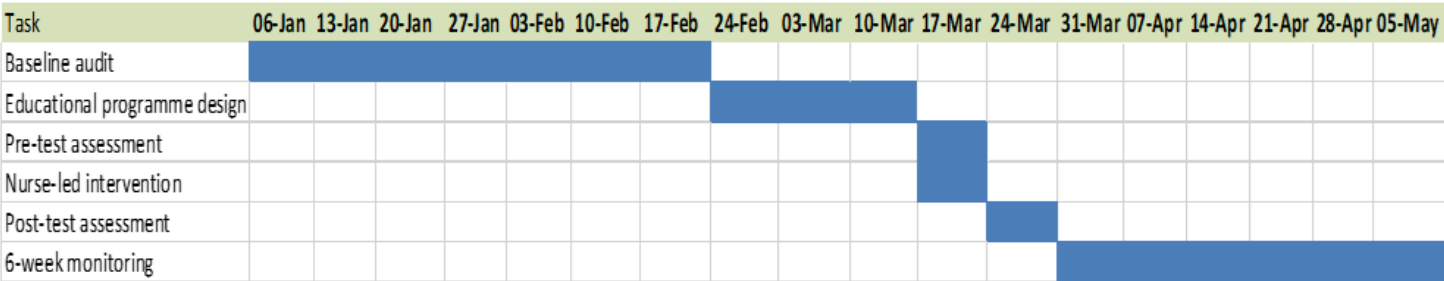


Figure 1

Timeline of A Nurse-Led Educational Program and Patient Information Booklet to Enhance Chemotherapy Side-Effect Management and Self-Care

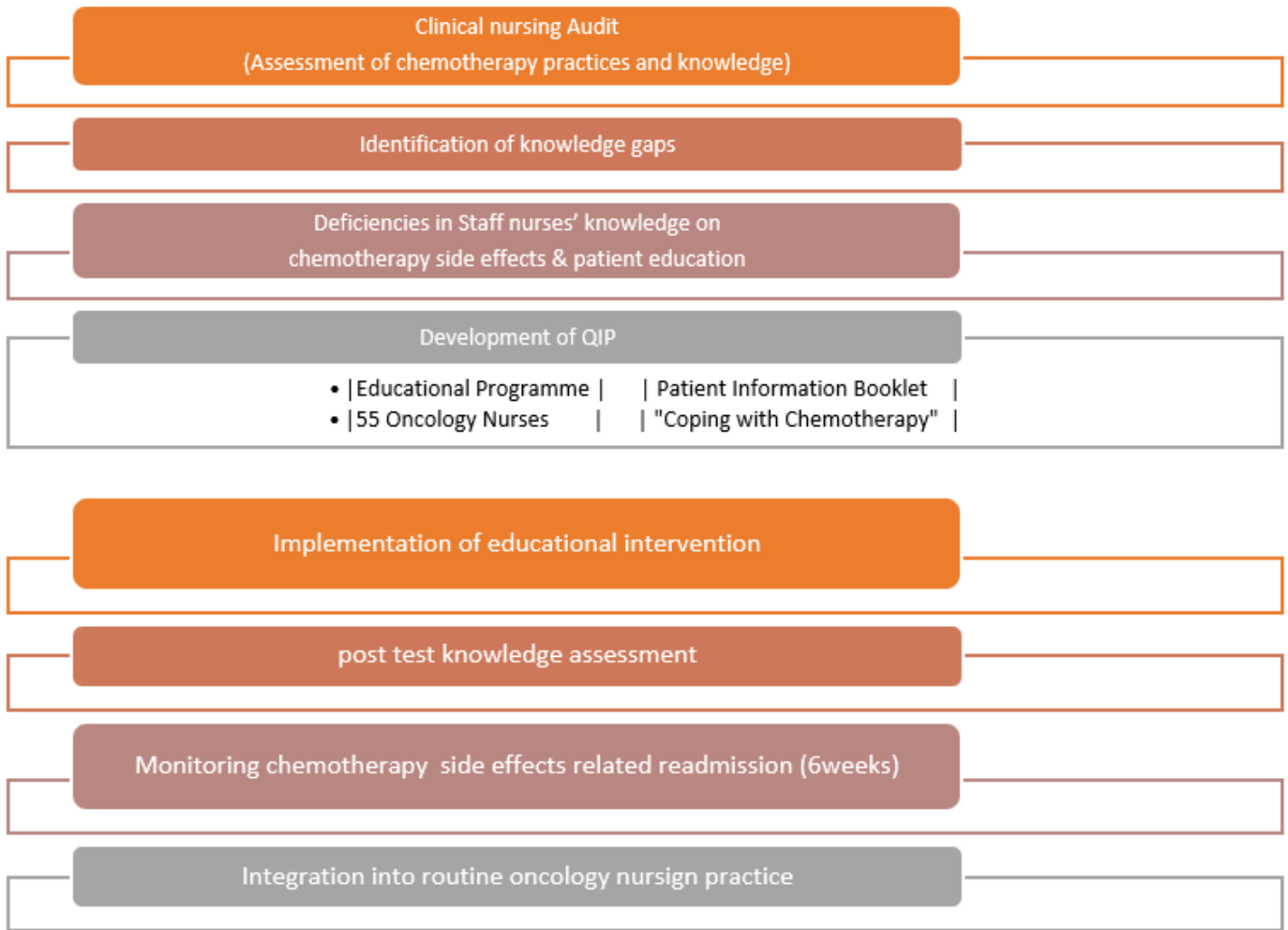


Figure 2

schematic representation of Nurse-Led Educational Program and Patient Information Booklet to Enhance Chemotherapy Side-Effect Management and Self-Care

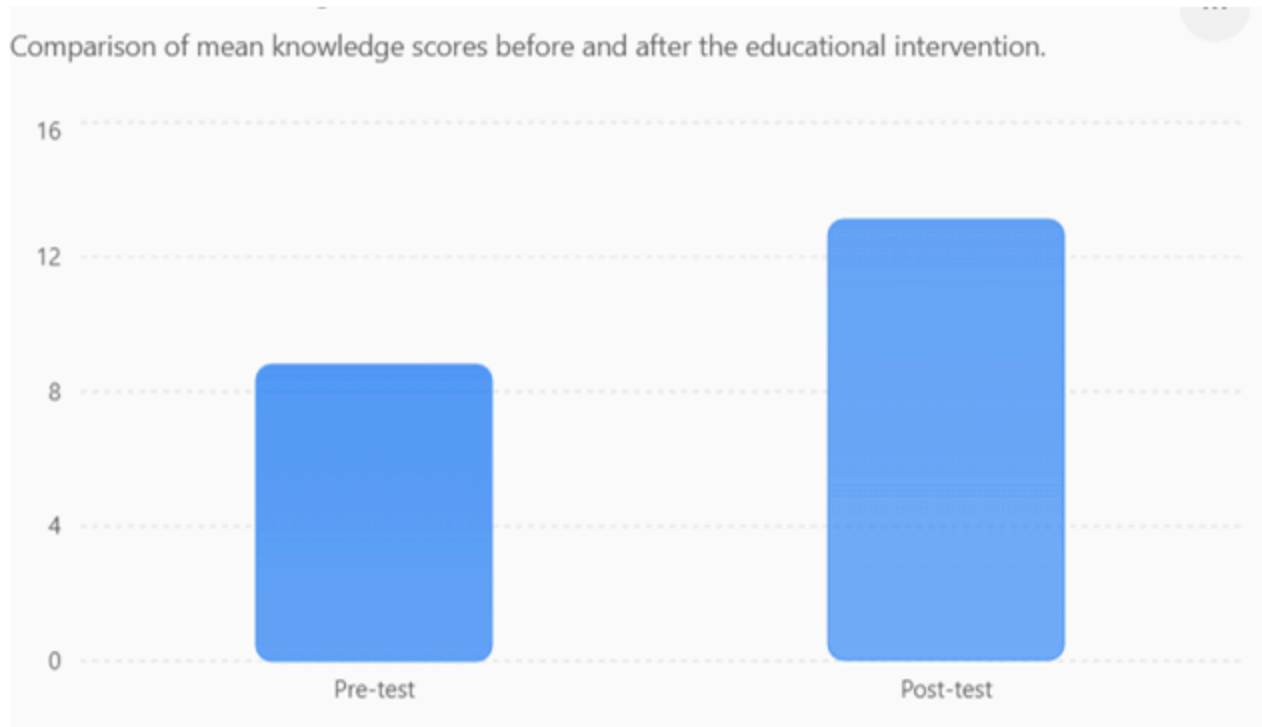


Figure 3

Comparison of pre-test and post-test knowledge scores of staff nurses regarding chemotherapy and its side effects

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Supplementaryfile1structuredknowledgequestionnaire.pdf](#)