

# Leveraging Inter-Professional Surgical Nurse Led Clinic (SNLC) for Optimal Outcome

Hepsibah Sharmil S<sup>1</sup>, R Anantharamakrishnan<sup>2</sup>, Manjula TR<sup>3</sup>, Kanimozhi S<sup>4</sup>, Mohammed Reyhan M<sup>5</sup>, Adhavan P<sup>6</sup>, Aarya Chandran J<sup>7</sup>, Jeeva T<sup>8</sup>, Jayamuthupakalvan S<sup>9</sup>

## Abstract

*There is a pressing need to set up a nurse-led clinic in general surgery. With surgeries becoming more complex and patient numbers rising, it is crucial to use healthcare resources more effectively. The objectives were to establish nurse led surgical clinic in collaboration with the general surgery department, assess the impact on surgical patient outcomes, evaluate patient satisfaction, and analyse resource utilisation. Participatory action research methodology was employed using mixed methods focused on surgical patients (n=201) in unit-1 of the department of general surgery. Quantitative data was gathered through a self-administered questionnaire on patient satisfaction. Semi-structured interview was conducted to gather qualitative data on the effectiveness of Nurse Led Clinic (SNLC) SNLC to understand their experience. The analysis showed that SNLC services were beneficial to the surgical patients and consistently high in satisfaction rate (96.0%) in outpatient, pre-operative, and post-operative phases of the study. Surgeons expressed complete satisfaction with SNLC across the board. These results demonstrate the potential of SNLC to improve gratifying surgical experiences among surgical patients. SNLCs are crucial for improving surgical care practices and obtaining better patient outcomes as healthcare systems transition to more individualised and effective care models.*

**Key words:** Nurse-led clinic, Inter-professional collaboration, Patient satisfaction

In India, the need for nurse-led clinics is crucial as there are increasing surgical conditions and the availability of trained surgeons in terms of doctor patient ratio are limited. Nurse-led clinics are essential for quality patient care and have proven in efficient resource utilisation in the healthcare delivery across the world. Over the years, nurse-led clinics have taken more responsibilities, and it can be seen in hospital outpatient departments, public health clinics, and independent practice settings. This has expanded the opportunities for nurses to practice more independently and learn to apply advanced practice in clinical setting. The health services are facing challenges in increased patient census, lack of manpower, uneven patient surgeon ratio and ever-increasing healthcare expenses. Setting up nurse-led clinics shall be instrumental to provide specialised care to work in collaboration with the surgeons. With the demanding societal need in medical science and technological advancement, the role of nurses has broadened to encompass functions such as clinician, patient

manager, leader, researcher, and advanced nurse practitioner. This wider scope has significantly helped bridge the gap between medicine and nursing, leading to the development of nurse-led clinics (Rani & Kaur, 2019).

Surgical nurse-led clinics offer a unique opportunity to maximise these treatments while providing specialist care that can improve the course of the patient's recovery. Health care environment is ever-changing with increasing demands for effective and patient-centred treatment. Creating a surgical nurse-led clinic is an effective approach to provide comprehensive treatment. It consists of multiple points of contact, from the first consultation to constructive resolution, where patient care can achieve better patient outcomes. These clinics are suitable for an advanced surgical care trained nurses to oversee pre-operative evaluations, patient education, and post-operative follow-ups and review. The involvement of the nurses with deeper understanding of the care provided is the key aspect in nurse led clinics. Surgeons can focus on sheer surgical duties while these staff members will oversee routine checks and care.

The doctor-to-patient ratio in India is lower than the World Health Organisation's recommended limit (1:1000). Nurse-led clinics are managed by

*The authors are: 1. Principal; 2. HOD, General Surgery Department; 3. Associate Professor, Department of Mental Health Nursing; 4-9 . B.Sc. (Nursing) Student, all at Chettinad College of Nursing, Tamil Nadu*

registered nurses to overcome the shortage of doctors and focus on managing conditions such as hypertension, diabetes, asthma, screening clinics, and follow-up care (Dailah, 2024). Patients are more satisfied with nurses' clinics in terms of cost, accessibility, and time spent clearing their concerns and doubts.

In nurse-led clinics, surgical resources are used as efficiently as possible to ensure that patients receive promising, tailored quality care. Patients often say that they find the surgical process to be overwhelming, which could be improved. A clinic run by surgical nurses offers patients a single point of contact for holistic continuity of care. Surgical nurse clinics are integrating with general surgery to bring major economic advantages to the healthcare industry. The burden of surgeons and hectic workload of nurses can be reduced by implementing the SNLC and in turn, patients receive high-quality patient-centred care.

Considering these circumstances, we have initiated SNLC at Chettinad Hospital and Research Institute to deal with the challenges faced by the healthcare system globally by providing specialised and coordinated care through a devoted team of surgical nurses at Chettinad Hospital. The SNLC supports surgeons by overseeing all aspects of surgical patient care including pre-operative planning, post-operative monitoring, and discharge planning. The integration of SNLCs into our healthcare system provides a model for other institutions in India and throughout the world. Improved patient outcomes and overall surgical care efficiency depend on the collaboration between nurses and surgeons.

### **Objectives**

The objectives of this study were to establish a surgical nurse-led clinic in association with the general surgery department, to formulate the SNLC pathway, and to assess the patients' satisfaction on SNLC services.

### **Review of Literature**

Extensive literature review was conducted using the key terms 'general surgery' and 'nurse-led clinic' applied to academic search engines such as Web of Science, PubMed, Scopus, Google Scholar, and ProQuest. This section highlights the impact of nurse-led clinics in general surgery settings. A 2017 study highlighted that nurse-led clinics were effective in reducing the patient waiting hours; access to specialised care were also improved and increased patient satisfaction levels were evident.

The benefits of nurse-led clinics in managing chronic conditions and post-operative

complications in general surgery (Brown & Jones, 2019) underscored the clinic's capacity to provide personalised care plans, monitor patient progress, and facilitate early intervention strategies, contributing to improved clinical outcomes and reduced hospital readmissions. The authors further confirmed that nurse-led clinics revealed a significant improvement in surgical patient outcomes, including decreased infection rates and enhanced recovery times. The clinic's active management approach and patient education initiatives were identified as critical factors in achieving these outcomes.

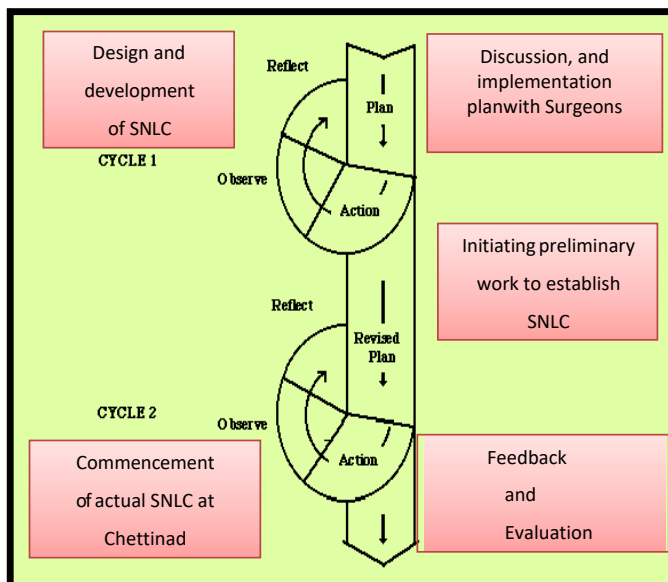
It was also found that cost savings were possible through efficient resource utilisation and effective patient management. The organisational benefits of nurse-led clinics in the general surgery department were proven in the study by Roberts & White (2016). The study spotlights the clinic's role in reducing waiting periods for surgical procedures, improving operational capacities, and assurance of timely access to surgical intervention for patients. An integral review of nurse-led clinic model amidst surgical specialities including general surgery reinforced the clinic's impact and their significance in modern healthcare delivery models. Due to the centralisation of clinic services, the clients experience less disruption, and the one-to-one focus of the nurses facilitates their ability to render quality care promptly and efficiently (Ryan, 2000). It highlighted the benefits of a nurse-led preoperative assessment clinic where a senior nurse was employed instead of a consultant or anaesthetist, but the quality of care remains the same. A qualitative study by Dhar et al (2024) also explored the client and family experience of visiting a nurse-led chronic wound clinic. Thematic analysis was conducted on transcribed semi-structured telephone interviews about client experiences in nurse-led clinics for chronic wounds and digital ulcers, focusing on topics like pain management, satisfaction, and accessibility, while acknowledging expenses as a challenge. Grasping the holistic impact of nurse-led clinics in the field of general surgical care necessitated an understanding of patient and family perspectives.

The reviewed studies demonstrated the vital role SNLCs played in enhancing patient outcomes, optimising resource utilisation, and ensuring efficient client care and providing a firm basis for understanding their potential benefits in general surgical settings. The literature review showcased the worldwide achievement of nurse-led clinics, highlighting their favourable effect on patient results, resource administration, and healthcare productivity (Bhati et al, 2023). The

research literature favours the use of nurse-led clinics in general surgery as a key strategy to raise the standard of patient care, optimise the use of healthcare resources, and improve clinical results. They offer useful information; however, more investigation is necessary to fully examine the advantages and difficulties of nurse-led initiatives in many surgical settings. This study was initiated to set up a surgical nurse-led clinic in union with the general surgery department and to assess the surgical patients' satisfaction with SNLC services.

## Materials and Methods

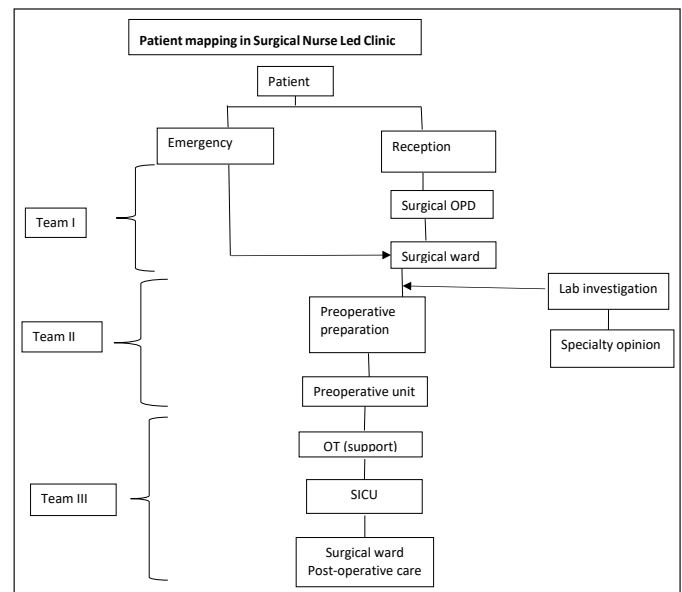
**Establishing the Surgical Nurse-Led Clinic through PAR:** The participatory action research methodology (Figure 1) was established in the surgical nurse-led clinic at the outpatient unit of Chettinad Hospital & Research Institute (CHRI) in Kelambakkam (Tamil Nadu, India). It is a tertiary-level hospital with 1,335 beds, 320 surgical beds, and 16 operation theatres. The initial phase of this research was started by planning and framing the Research Working Party Members (WPM) team which comprised of the chief investigator, chief surgeon, head of surgery department, SNLC unit nurses, and support staff in surgical department. Monthly meetings, supervised by the chief investigator, were held to develop the SNLC agenda and the gradual implementation process. This team actively worked together throughout the project, evaluating its progress from planning to execution, providing ongoing assessment through participatory action research and its effectiveness.



**Figure 1: Participatory action research on Surgical Nurse-led Clinic (SNLC).**

The action phase began by the establishment of an SNLC, which was placed next to the surgical

outpatient department. The SNLC operates in close partnership with surgeons to broadly address all aspects of the surgical patient's journey from admission to discharge and follow-up. Supervised by the Nursing Chief (primary researcher) and SNLC nurse manager, the SNLC team included six graduate nurses, with two nurses trained for each of the three major areas: Team I - Surgical OPD, Team II - Surgical Ward (covering pre-operative and post-operative care), and Team III - Operation Theatre support (including the recovery room) and Surgical Intensive Care Unit (ICU) and Team II took care of a patient till discharge from the surgical ward (Figure 2). SNLC team was led by the principal researcher in coordination with SNLC nurse manager and HOD General Surgery with unit surgeons. The comprehensive care provided to the patients was documented in contemporary hospital records and a uniquely tailored form for SNLC patients. Among the eight units of the general surgery department, first unit patients were recruited for the study between March 2023 to December 2023.



**Figure 2: SNLC Pathway.**

Participant recruitment for the study to establish a surgical nurse-led clinic in general surgery was initiated during the implementation phase, utilising a stratified random sampling technique to ensure a representative and comprehensive evaluation of the clinic's impact. The patient population from Surgical Unit 1, one of the eight units within the department, was divided into distinct strata based on relevant characteristics such as type of surgical procedure, age, and pre-existing health conditions. Patients within each stratum were randomly selected to participate, ensuring all subgroups were adequately represented. This approach allowed for

a balanced assessment of the clinic's effectiveness across different demographics and surgical categories, thereby enhancing the generalisation of the findings and accurately reflecting the diverse needs and outcomes associated with the clinic; 201 adult surgical patients who were in the age above 21 years and having consented to participate in the study were recruited. Individuals with severe cognitive impairments and children were excluded due to their dependency and vulnerability to social restrictions. Ethics approval for the study was obtained.

It started with data collection and three open-ended interview questionnaires on the experience of SNLC administered, analysing the aspects of their individual surgical treatment pathway. Physical assessment and vital signs were documented. The quantitative tool comprised of three sections which included self-structured demographic and surgical profile of the surgical patients, satisfaction on SNLC pathway and semi-structured interview schedule to collect qualitative data on experience on SNLC among patients and surgeons. The participants responded with an honest Yes/No on the surgical profile items. A self-structured questionnaire relating to satisfaction on SNLC pathway was created. It consisted of 4-point Likert scale which includes 28 items to assess the surgical patients' satisfaction across five domains at OPD, pre-operative ward, operation theatre, post-operative ward and with surgeons. Each item has responses such as very dissatisfied, dissatisfied, satisfied and very satisfied which was scored as 1, 2, 3 and 4 respectively, and interpreted. This tool highlights the surgical patients experience in terms of service access, care coordination, satisfaction, and service safety/quality. The validity of the tool was established in consultation with the experts in the field of general surgery and nursing.

In the implementation of the SNLC through participatory action research, the addition of nursing theory is crucial for a complete and structured approach to this healthcare initiative. We applied the Neuman Systems Model by Betty Neuman (1972) and Murray & Zoucha (2009), which signifies holistic patient care within a dynamic environment. To align the SNLC with this model, action research was employed, and the research spiral plan, act, observe, and reflect was systematically executed. Throughout the action research cycles, data were collected using the Donabedian paradigm, analysing structure, process, and outcome in healthcare. This extended beyond healthcare evaluation to define and assess the nurse-led surgical service model.

## Results

Analysis on SNLC includes quantitative and qualitative methods which comprehensively highlight the patient satisfaction on SNLC. Interview responses were transcribed and coded thematically to identify the key themes and reveals the patient's satisfaction upon the services rendered and their care experiences. The integration of qualitative themes with quantitative trends through triangulation provided a holistic perspective of patient satisfaction culminating in a detailed report with visual data representations and actionable recommendations for improving the SNLC system.

**Quantitative analysis:** The data collected were coded, tabulated and analysed using descriptive statistics like frequency, percentage and inferential statistics like chi-square test. The collected data were entered into computerised database and statistical analysis was done using statistical package for social science, version 27 with statistical significance set at  $p < 0.05$ . The demographic characteristics of study subjects and the level of satisfaction on SNLC are given in Table 1. Table 2 outlines the health profile of patients attending the Surgical Nurse-Led Clinic. Table 3 shows patient satisfaction with SNLC services across OPD, surgical ward, and OT/surgical ICU was evaluated for effectiveness.

The study analysed demographic factors among surgical patients attending SNLC services in a general surgery department. Age distribution showed a predominant representation of patients aged 41-60 years which is about 48.7 percent. However, it did not significantly influence satisfaction levels with SNLC ( $\chi^2 = 2.307$ ,  $p = 0.511$ ).

Gender occurred to be another significant factor affecting the satisfaction, with males reporting higher satisfactory rate (59.7%) compared to females (40.3%) ( $\chi^2 = 4.895$ ,  $p = 0.027$ ). However, there were no relation found between satisfaction levels and religions (Hindu, Christian, Muslim), education (Primary Education, Higher Secondary, Graduate), work environment (Office-Based Job, Field-Based Job, Laborious job), transport mode (Own Vehicle, Public Transport, Pedestrian), or daily exercise habits (Walking, Yoga, Cycling).

The study's overall outcome emphasised the positive impact of SNLC services in enhancing patient satisfaction and regulating the clinical outcomes across various stages of surgical care. These findings proved the need of nurse-led practices to further enhance surgical care quality and patient experiences in healthcare settings.

**Table 1: Analysis of demographic variables and satisfaction with SNLC services (N=201)**

Demographic variable	Frequency	(%)	Satisfaction on SNLC			Chi-square	p value
			Low level	Moderate level	High level		
<i>Age</i>							
21-40	70	(34.8)	0	3	63	2.307	0.511
41-60	98	(48.7)	0	2	93		
61-80	33	(16.5)	0	2	26		
<i>Gender</i>							
Male	120	(59.7)	0	7	113	4.895	0.027(S)
Female	81	(40.3)	0	0	81		
<i>Religion</i>							
Hindu	176	(87.6)	0	5	172	4.387	0.112
Christian	17	(8.4)	0	2	14		
Muslim	8	(4.0)	0	0	8		
<i>Education</i>							
Primary education	57	(28.3)	0	3	54	0.971	0.615
Higher Secondary	90	(44.8)	0	2	88		
Graduate	54	(26.9)	0	2	52		
<i>Work environment</i>							
Office-based job	76	(37.8)	0	2	74	0.265	0.876
Field-based job	52	(25.9)	0	2	49		
Laborious	73	(36.3)	0	3	71		
<i>Transport</i>							
Own vehicle	77	(38.3)	0	2	75	0.389	0.823
Public transport	122	(60.7)	0	5	117		
Pedestrian	2	(1.0)	0	0	2		
<i>Daily exercise</i>							
Walking	150	(74.6)	0	5	145	1.809	0.405
Yoga	22	(11.0)	0	0	22		
Cycling	29	(14.4)	0	2	27		

**Qualitative analysis:** Ideological analysis identified three main themes from patient feedback: Benefits, Challenges, and Proposed Solutions.

**Benefits:** Patients praised SNLC and nurses for their careful care, effective communication explaining surgeon opinion to the level of patient, and partnering with surgeons and providing personalised attention that enhanced recovery and patient satisfaction. To quote them: *“They treated me really well. I understood the need for surgery they explained, and it helped me walk and stay positive (M71)”*. *“SNLC was excellent and easy to understand. Their support significantly contributed to a faster recovery.”* (F20)

**Challenges:** Communication barriers, particularly language difficulties during doctor-patient interactions, were noted as a challenge. Patients also pointed out certain issues to navigate within the healthcare system.

**Solutions:** Patients suggested improvements in the challenges and infrastructure to enhance transparency, efficiency, and patient comfort within

the clinic. In their own words, *“There was some delay in their care (F54) but SNLC had substantial room for improvement in management and caring strategies”*. (F52)

The findings of the study using quantitative and qualitative approach implies the positive impact of SNLC in elevating the patient satisfaction, clinical outcomes, surgical care quality and the overall patient experiences.

### Discussion

Surgical Nurse-Led Clinic (SNLC) patient satisfaction was much greater in the general surgery department. It was essential to include gender determination, as male patients reported higher levels of satisfaction than female patients. On satisfaction levels; however, age does not seem to have much of an impact. This result is consistent with previous research experiences of previous researchers on healthcare. Age, gender, and educational qualification were the generally assessed demographic characteristics of the

**Table 2: Health profile of patients attending the Surgical Nurse-Led Clinic (N=201)**

Surgical profile	Frequency	(%)
Deficiency		
Anaemia-iron deficiency	5	(2.5)
Iodine deficiency	6	(3)
Vitamin D deficiency	3	(1.5)
Nil	187	(93)
Medical condition		
Diabetes Mellitus	48	(23.8)
Hypertension	14	(7)
Thyroid imbalance	2	(1)
Nil	137	(68.2)
Regular medication		
Hypertension	13	(6.5)
Diabetes mellitus	47	(23.4)
Thyroid medication	6	(3)
Nil	135	(67.1)
Mental health issues		
Present	0	(0)
Absent	201	(100)
Substance Abuse		
Smoking	18	(9)
Pan	10	(5)
Alcohol	30	(14.9)
Nil	143	(71.1)
Past surgery		
Yes	0	(0)
No	201	(100)
Perioperative medication		
Antibiotics	2	(1)
Analgesic & antipyretics	8	(4)
Proton pump inhibitor	2	(1)
All of the above	189	(94.0)

surgical patients in most of the surgical nurse-led clinic studies. Predominance of middle-aged participants reflects the typical demographic seeking surgical interventions. The religious distribution and educational attainment observed in our study align with the sociocultural context of similar studies. Johnson & Brown (2019) found that a significant portion of their surgical clinic patients had at least secondary education, similar to the 44.8 percent observed in this study.

Surgical patients who attended SNLC had a prevalence of diabetes mellitus and hypertension which is consistent with findings from other studies. Brown et al (2018) reported in their study, surgical patients had comparable rates of diabetes and hypertension, which raises the need for managing these chronic conditions in similar settings. Though a small portion of participants had nutritional deficiencies, these results are in line with the findings from Patel et al (2020), who showed comparable ratios of iron and vitamin D deficiency in their sample of surgery patients. This underscores the importance of nutritional screening and treatments.

Our study found that SNLC was effective (96%) in managing pre-operative assessments, surgical preparations, and intraoperative care. These findings align with research emphasising the positive impact of nurse-led initiatives (Brown & Jones, 2022). Correlating these findings with research conducted in India, other investigators also highlighted similar trends in gender-based satisfaction disparities and noted specific challenges in healthcare infrastructure and communication, which can influence patient perceptions differently.

Significant levels of satisfaction with SNLC services are observed at different stages of surgical care. A nurse-led surgical clinic reported that 95 percent of patients were satisfied with the care

**Table 3: Frequency distribution of surgical patients based on their satisfaction score on SNLC at specific care areas (N=201)**

Area	Satisfaction scores					
	Low level		Moderate level		High level	
	Frequency	(%)	Frequency	(%)	Frequency	(%)
OPD	0	(0)	8	(4.0)	193	(96.0)
Pre-op	0	(0)	8	(4.0)	193	(96.0)
OT	0	(0)	8	(4.0)	193	(96.0)
Post-op	0	(0)	148	(73.6)	53	(26.4)
Surgeon's satisfaction on SNLC	0	(0)	0	(0)	201	(100)
Overall SNLC satisfaction	0	(0)	8	(4.0)	193	(96.0)

they received, which is similar to the 96 percent satisfaction rating reported in the study by Green et al (2021). In line with findings from Lee et al (2019), who observed comparable satisfaction rates for pre-operative treatment in nurse-led clinics, the high satisfaction in the outpatient department and operating theatre (96%) indicates excellent pre-operative assessments and surgical preparations. AlZayed & Lalithabai (2024) evaluated patient satisfaction with nurse-led wound care services revealed that 92.5 percent of respondents reported being “very satisfied” or “mostly satisfied” with the overall service they received. The patients were positively satisfied with the wound care services and it supports this study. The focus on improvement in post-operative treatment and discharge planning was reflected by the lower satisfaction percentage (26.4%) on the post-operative ward. This finding aligns with research by Brown & Jones (2018), which highlighted the need for enhanced post-operative care to improve patient outcomes and satisfaction. The universal satisfaction (100%) among surgeons with SNLC services emphasises the crucial role of nurse-led clinics in facilitating collaborative patient care and clinical management. This finding was supported by other investigators, who explored the benefits of collaborative initiatives in improving patient outcomes in their newly developed nurse-led complex wound clinic. It also highlighted the support rendered by the clinic specialist to the nurses and the caregivers to fulfil their role in caring for the patients. The present study underscores a high satisfaction level (96%) among surgical patients, providing a thorough analysis of both quantitative and qualitative data, and offering a comprehensive view of the effectiveness of SNLCs. This is supported by a quasi-experimental study evaluating the feasibility of a nurse-led follow-up clinic for post-myocardial infarction (MI) patients, which demonstrated overall inter-rater agreement ranging from 87.34 percent to 99.8 percent (Usha et al, 2018). The findings from this study, along with similar research, support the continued integration and expansion of nurse-led practices to enhance surgical care quality and patient experiences. Future research can focus on longitudinal studies to track the progression of chronic conditions and the impact of interventions over time. Additionally, investigating the effectiveness of current nutritional interventions and strategies to reduce substance misuse among patients could provide valuable insights.

### Limitations

It is difficult to generalise the findings to wider healthcare contexts and diverse patient populations

with the single-centre design. Comparative settings are to be established for assessing the SNLC services and pathways. It could be desirable to collaborate with multiple centres to validate the results in a variety of contexts and demographic groups. Longitudinal studies on the stability of SNLC pathways and surgical care phases can yield deeper information. Finally, the necessity for cautious interpretation of the data is concerning due to the necessity of careful efforts in controlling confounding variables, inherent biases, and unmeasured factors that impact the study's outcomes.

### Recommendations

Following recommendations are made to enhance the effectiveness and patient satisfaction of SNLC in general surgery:

- o Conduct multi-centre studies to improve the external validity of SNLC findings and capture diverse patient experiences across different healthcare settings.
- o Implement strong quality assurance protocols to standardise SNLC practices, ensure consistency in care delivery, and ease potential biases in patient-reported outcomes.
- o Patient engagement strategies include individuals in decision-making processes, improve health literacy, and foster active participation in their surgical care journey.
- o Continuous training and professional development for SNLC teams to enhance clinical competencies, communication skills, and patient-centred care practices.

### Implications

The implications derived from this research study underscore critical considerations for progressing SNLC in general surgery practice.

- *Industrialised nurse-led clinic:* Promote interdisciplinary relationship and incorporation of SNLC within surgical teams to optimise clinical workflows, enhance care coordination, and improve patient satisfaction throughout the perioperative period.
- *Technology integration:* Controlled technological advancements are introduced to rationalise SNLC processes, enhance patient communication, and facilitate real-time data exchange for informed decision-making and personalised patient care.
- *Inclusive patient care:* Patient-centred approach was emphasised within SNLC frameworks, tailoring care plans to meet individual patient needs, preferences, and cultural considerations.

Addressing these recommendations and implications can strengthen SNLC's role in general surgery, driving improvements in patient outcomes, healthcare quality, and overall satisfaction. Continued research and implementation efforts are essential to refine and optimise nurse-led clinical practices, ensuring they meet the evolving needs of surgical patients across diverse healthcare environments. Enhancing communication strategies and optimising healthcare infrastructure within SNLC frameworks can mitigate barriers and further enhance patient satisfaction and clinical outcomes in general surgery settings.

### Acknowledgment

We acknowledge the Head of the General Surgery, and the surgical department for collaborating with nursing team for the successful implementation of at SNLC.

### Conclusion

The study reaffirms SNLC's critical role in delivering patient-centred care and optimising surgical outcomes in general surgery departments. By addressing specific surgical needs and healthcare infrastructure challenges, SNLC can effectively meet the diverse needs of surgical patients, contributing to improved healthcare quality and patient satisfaction. Future research could continue to explore these dynamics to further refine nurse-led practices and enhance healthcare delivery across different global and regional contexts.

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### Corrigendum

At page 111 of last issue of Nursing Journal of India (May-June 2024, Vol. CXV No. 3), in the second line of title of the article, last two words inadvertently went as 'Tamil Nadu' instead of 'Kerala', which is regretted. The title may please be read as: "Knowledge & Practice regarding Animal Bite among Bite Victims Attending OPD Services in Karukachal (Kerala)" - Editor.