



Sustainability of Knowledge and Self-Care Practice Gains at a Five-Week Physical Follow-Up Visit, Supported by Interim Telephonic Reinforcement, after a Structured Educational Intervention among Ostomates in Pakistan

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Abstract

Background: Immediate gains from patient education can fade without reinforcement, so whether improvements in ostomy knowledge and self-care practice are sustained after discharge is a critical test of an educational intervention's real-world value.

Objective: To evaluate whether improvements in knowledge and self-care practice achieved by a structured educational intervention were sustained, and whether they continued to change, at five-week follow-up among ostomates in a tertiary care hospital in Faisalabad, Pakistan, and to describe the role of structured telephonic reinforcement in that outcome.

Methods: In a quasi-experimental, one-group study, 34 ostomates received a structured educational intervention (a single face-to-face session with hands-on demonstration and an Urdu-language booklet), followed by interim structured telephonic contact for reinforcement and query resolution from the first through the fifth week after discharge. Knowledge and self-care practice were assessed using the Knowledge and Self-Care Practice Tool for Ostomates (Kang & Choudhary, 2024) at one week (T1) and at a physical, face-to-face follow-up visit at five weeks (T2) post-intervention; paired-samples t-tests compared T1 and T2 scores.

Results: Knowledge scores rose further from $M = 15.44$ ($SD = 1.31$) at T1 to $M = 16.47$ ($SD = 0.51$) at T2 ($t(33) = -4.15, p < .001$). Self-care practice scores similarly increased from $M = 10.18$ ($SD = 0.87$) at T1 to $M = 10.82$ ($SD = 0.39$) at T2 ($t(33) = -4.11, p < .001$).

Conclusion: Gains in knowledge and self-care practice achieved through a structured ostomy education intervention were not only retained but continued to improve by the five-week physical

follow-up visit, suggesting that interim telephonic reinforcement between the teaching session and the follow-up visit supports the durability and continued strengthening of ostomates' self-care agency after discharge.

Keywords: Ostomates; follow-up; telephonic reinforcement; knowledge retention; self-care practice; Pakistan.

Introduction

A well-designed educational session can produce large immediate gains in patient knowledge and skill, but whether those gains persist once a patient leaves the structured environment of a teaching session is a separate and equally important question. For ostomates, who must independently manage pouching, peristomal skin care, and complication recognition for an extended period after discharge, the durability of learning has direct implications for complication rates, confidence, and quality of life. International evidence on this point is mixed. Some studies report that gains from ostomy education programs are not well maintained when no reinforcement is provided after the initial teaching session (Abdelmohsen, Abdrbo, Mohamed, & Hassan, 2020), while others describe only limited long-term impact when intervention periods are short and follow-up is minimal (Ghanbari, Eslami, & Mahdizadeh, 2021; Ashghali & Dorri, 2022). This suggests that the structure and continuity of post-discharge support, rather than the initial teaching session alone, may determine whether educational gains are sustained.

This paper reports the follow-up component of a larger quasi-experimental study evaluating a structured educational intervention for ostomates in Pakistan. A companion paper from the same study reports the immediate, pre- to post-intervention (T0–T1) effect of the same intervention; this paper focuses specifically on the one-week-to-five-week (T1–T2) comparison. During this interval, participants received interim structured telephonic contact for reinforcement and query resolution, with knowledge and self-care practice formally reassessed at a physical, face-to-face follow-up visit at five weeks.

Objective

To evaluate whether the knowledge and self-care practice gains achieved by a structured educational intervention were sustained, and whether they changed further, between one week (T1) and five weeks (T2) post-intervention among ostomates at a tertiary care hospital in Faisalabad, Pakistan.

Methods

Design and Setting

This paper reports the follow-up (T1–T2) component of a quasi-experimental, one-group pretest-posttest study conducted in the surgical department of Allied Hospital, Faisalabad, a 1,200-bed tertiary care government hospital.

Population and Sampling

Thirty-four adult ostomates (aged 18 years and above, with a temporary or permanent colostomy or ileostomy) were recruited by convenience sampling from 62 patients screened during the study period; the sample size was determined a priori using G*Power ($\alpha = 0.05$, power = 80%, $d = 0.5$), inflated for an anticipated 10% attrition rate. Eligibility and exclusion criteria were identical to those described in the companion pre-post paper from this study.

Instrument

Knowledge and self-care practice were assessed using the Knowledge and Self-Care Practice Tool for Ostomates, adapted from Kang and Choudhary (2024), which has demonstrated strong content validity (item-level CVI = 1.00; scale-level CVI = 0.88–0.98) and acceptable internal consistency (Cronbach's $\alpha = 0.847$). The same Urdu-translated tool and standardized administration procedure were used at both the one-week and five-week assessments.

Intervention and Follow-Up Procedure

Following the structured educational intervention, delivered as a single face-to-face session with hands-on demonstration and distribution of an Urdu-language take-home booklet, participants received a contact number for post-discharge queries. Between the one-week post-intervention assessment (T1) and the five-week follow-up, the principal investigator maintained interim structured telephonic contact with each participant, using these calls to clarify questions, correct errors in technique, and reinforce key self-care behaviors. The formal follow-up assessment (T2) itself, however, was conducted as a physical, face-to-face visit at five weeks, using the same standardized administration procedure as the T0 and T1 assessments, to evaluate the retention and continued development of knowledge and self-care practice.

Data Analysis

Data were analyzed using IBM SPSS Statistics version 27. Descriptive statistics summarized scores at each time point, and paired-samples t-tests compared knowledge and self-care practice scores between the one-week (T1) and five-week (T2) assessments.

Ethical Approval

Ethical approval was obtained from the Institutional Review Board of the National University of Medical Sciences (ERB No. 574-AAA-ERC-AFPGMI). Written informed consent was obtained from all participants, and data were collected and stored confidentially with restricted, password-protected access.

Results

All 34 participants who completed the post-intervention (T1) assessment also completed the five-week follow-up (T2) assessment, with no loss to follow-up during this period.

Knowledge: Retention and Change from T1 to T2

Knowledge scores, already substantially improved at T1 ($M = 15.44$, $SD = 1.31$), rose further to $M = 16.47$ ($SD = 0.51$) at the five-week follow-up. This further increase was statistically significant ($t(33) = -4.15$, $p < .001$), indicating that gains in knowledge were not only retained but continued to strengthen during the follow-up period.

Table 1. Paired-Samples Statistics for Knowledge Scores, T1 vs T2 ($n = 34$)

Time Point	Mean	SD	T	df	p
Post-intervention (T1, 1 week)	15.44	1.31			
Follow-up (T2, 5 weeks)	16.47	0.51	-4.15	33	< .001

Self-Care Practice: Retention and Change from T1 to T2

Self-care practice scores similarly continued to improve, rising from $M = 10.18$ ($SD = 0.87$) at T1 to $M = 10.82$ ($SD = 0.39$) at T2. This difference was also statistically significant ($t(33) = -4.11$, $p < .001$), indicating sustained and continued strengthening of participants' practical self-care behaviors.

Table 2 Paired-Samples Statistics for Self-Care Practice Scores, T1 vs T2 ($n = 34$)

Time Point	Mean	SD	T	df	p
Post-intervention (T1, 1 week)	10.18	0.87			
Follow-up (T2, 5 weeks)	10.82	0.39	-4.11	33	< .001

Overall Trend Across Time Points

For context, Table 3 summarizes knowledge and self-care practice scores across all three assessment points of the parent study. Both variables show their largest gain between baseline and one week, with a smaller, but still statistically significant, further increase between one week and five weeks.

Table 3. Knowledge and Self-Care Practice Scores Across Time Points (n = 34)

Variable	T0 (Baseline) Mean $\pm$ SD	T1 (1 Week) Mean $\pm$ SD	T2 (5 Weeks) Mean $\pm$ SD
Knowledge Score	2.29 $\pm$ 1.27	15.44 $\pm$ 1.31	16.47 $\pm$ 0.51
Self-Care Practice Score	2.09 $\pm$ 1.22	10.18 $\pm$ 0.87	10.82 $\pm$ 0.39

Discussion

This study found that knowledge and self-care practice gains achieved through a structured educational intervention were not merely maintained but continued to improve between the one-week post-intervention assessment and the five-week physical follow-up visit, a period during which participants received interim structured telephonic contact. Within Orem's Self-Care Deficit Nursing Theory, this pattern is consistent with a supportive-educative nursing system operating continuously rather than as a single, time-limited encounter: ongoing telephone contact allowed the researcher to correct errors, answer questions, and reinforce key behaviors as they arose in participants' home environments between the two in-person assessments, rather than relying on a single teaching session to carry all of the therapeutic and educational weight. This finding contrasts with reports from settings where education was not reinforced after an initial session. Abdelmohsen, Abdrbo, Mohamed, and Hassan (2020) found that self-care instruction increased knowledge and practice initially but did not sustain practice without follow-up support, while research from Iran described only limited long-term impact when interventions were brief and reinforcement absent (Ghanbari, Eslami, & Mahdizadeh, 2021; Ashghali & Dorri, 2022). Group-based programs without individualized reinforcement have similarly shown negligible longer-term effects (Evensen, Johansen, & Larsen, 2019). The continued improvement observed in the present study, rather than a plateau or decline, suggests that structured, scheduled telephonic contact across the follow-up window did more than preserve initial gains: it appears to have actively supported further consolidation of both knowledge and practical skill. These findings have practical relevance for a resource-constrained setting such as Pakistan, where formal ostomy-care training and post-discharge support are limited (Zulfiqar, Rehman, Khan, & Ahmed, 2022). A relatively low-cost telephonic follow-up protocol, layered onto a single teaching session, may offer a feasible way to extend the reach and durability of ostomy education without requiring additional in-person visits.

Limitations

The follow-up period evaluated here was limited to five weeks, so these findings speak only to short-to-medium-term durability; whether gains are sustained over months or years, once telephonic contact ends, remains unknown. The single-group design without a comparison group that received the intervention without follow-up reinforcement makes it impossible to isolate the specific contribution of the telephonic component from the passage of time or continued informal practice. The single-site, convenience-sampled population also limits generalizability.

Strengths

This study benefits from complete follow-up data with no attrition between T1 and T2, a standardized and validated assessment tool used consistently across time points, and a clearly defined, structured follow-up protocol (scheduled telephonic contact from week 1 through week 5) that can be described and replicated in other settings.

Conclusion

Knowledge and self-care practice gains achieved through a structured educational intervention for ostomates were sustained, and continued to improve, across a five-week period supported by structured telephonic follow-up. These findings suggest that pairing a single structured teaching

session with ongoing, low-intensity reinforcement is an effective strategy for extending the durability of ostomy education in a low-resource setting.

Recommendations

- Structured post-discharge telephonic follow-up should be incorporated as a standard component of ostomy education programs, not only the initial teaching session.
- Future studies should include a comparison group that receives education without follow-up reinforcement, to isolate the specific contribution of telephonic contact to sustained outcomes.
- Follow-up periods longer than five weeks should be evaluated to determine how long gains are maintained once structured contact ends.
- Digital or telehealth-based follow-up platforms should be explored as a scalable alternative or complement to telephone-based reinforcement.
- Healthcare institutions should consider the frequency and format of follow-up contact (e.g., weekly calls) as an explicit, resourced component of discharge planning for ostomates.

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