Virtual Nursing Follow-Up After Emergency Department Discharge - A Systematic Review of Telehealth Solutions Bridging the Care Transition Gap

Ali Bin Mohammed Al Otayf[1]*, Waseem Ali Alquwayi[1], Khalid Mansour Nasser Alamri[1], Ahmad Nasser N. Almutairi[1], Abdulrahman Rashid Khalf Alanazi[1], Dakheelallah Salm H. Alotibi[1], Meshari Saud Obaid Alharthi[1], Saqer Owaid Awdh Alanazi[1], Ibrahim Saad Al-Dosari[1], Faleh Shaman Ayad Alharbi[1], Bashair Maqbool Sulaiman Alharbi[1], Abdulelah Abdullah Abdullah Bin Ajeb[1], Turki Mohsen Aldawssari[1], Ahmed Mohammed Shadad Alharbi[1], Rami Hanif Alotaibi[1], and Abdullah Ali Mahbub Asiri[1]

Abstract

Background: Transitions of care from the Emergency Department (ED) to home often mark one of the most fragile moments in a patient's recovery journey. Many patients leave the ED still uncertain about wound care, medications, and follow-up appointments, leading to medication errors, preventable complications, and avoidable readmissions. Against this backdrop, virtual nursing triage and follow-up have emerged as a compassionate and practical response—using telehealth video consultations to extend the nurse's expertise into the patient's home environment. Method: This systematic review synthesizes findings from forty studies published between 2010 and 2024 that examined nurse-led virtual follow-up interventions after ED discharge. Across diverse healthcare settings, these programs consistently demonstrated that a simple, structured video encounter within days of discharge can meaningfully improve recovery. Patients receiving virtual follow-up reported greater satisfaction, stronger confidence in self-care, and enhanced medication understanding. Quantitatively, these interventions reduced seven- and thirty-day revisit rates by 15%–42% and improved medication adherence by up to 35%. Results: Beyond numbers, the studies collectively paint a picture of renewed connection—where nurses provide reassurance, observe healing wounds, and bridge communication gaps that once left patients isolated. Yet, technological access, reimbursement policies, and workflow integration remain persistent challenges to broader adoption. Conclusion: In conclusion, virtual nursing follow-up transforms discharge from a moment of separation into an ongoing continuum of care. By merging human empathy with digital accessibility, this approach ensures safer recoveries, fewer complications, and a more equitable model for modern post-ED patient care.

Keywords: Virtual nursing, Telehealth, Emergency department, Care transition, Patient safety

Significance | This review highlights virtual nursing follow-up as a transformative, patient-centered approach enhancing safety, continuity, and outcomes after emergency discharge.

*Correspondence. Ali Bin Mohammed Al Otayf, Ministry of National Guard Health Affairs, Prince Mutib Ibn Abdullah Ibn Abdulaziz Road, Ar Rimayah, Riyadh 11426, Saudi Arabia.
E-mail: Akk29337@gmail.com

Editor Aman Shah Abdul Majid, Ph.D., And accepted by the Editorial Board 14 August 2024 (received for review 10 June 2024)

1. Introduction

The Emergency Department (ED) is a vital frontline of the healthcare system, constructed to deal with acute and life-threatening diseases. Nevertheless, the inherent mission of emergency medicine—stabilization and disposition—has the tendency to create a deep discontinuity in the patient care experience at discharge (Horwitz et al., 2013). The transition from the strictly controlled, supervised environment of the ED to the

Author Affiliation.
[1] Ministry of National Guard Health Affairs, Prince Mutib Ibn Abdullah Ibn Abdulaziz Road, Ar Rimayah, Riyadh 11426, Saudi Arabia.

Please cite this article.
Otayf, A. B. M. A., Alquwayi, W. A., Alamri, K. M. N., Almutairi, A. N. N., Alanazi, A. R. K., Alotibi, D. S. H., Alharthi, M. S. O., Alanazi, S. O. A., Al-Dosari, I. S., Alharbi, F. S. A., Alharbi, B. M. S., Ajeb, A. A. A. B., Aldawssari, T. M., Alharbi, A. M. S., Alotaibi, R. H., Asiri, A. A. A. M. (2024). "Virtual Nursing Follow-Up After Emergency Department Discharge - A Systematic Review of Telehealth Solutions Bridging the Care Transition Gap", Journal of Angiotherapy, 8(8),1-8,10439

independent and often tumultuous home setting is a period of heightened vulnerability. This "post-ED discharge gap" is a known chasm in the healthcare continuum, associated with suboptimal clinical outcomes, patient dissatisfaction, and inefficient allocation of resources (Hesselink et al., 2012).

Released ED patients typically struggle with unresolved or incomplete symptoms, excessive medications, unclear self-care orders for wounds or injury, and the daunting task of procuring follow-up care (Kripalani et al., 2007). The usual discharge process, frequently administered under dire time pressures and amidst departmental commotion, lends itself to patient education and communication breakdowns. Patients may not comprehend their discharge instructions, misunderstand medication schedules, or believe that they are not competent to perform required self-management (Samuels-Kalow et al., 2016). Accordingly, adverse events are common; it has been found that up to 20% of patients experience a post-discharge adverse event, with medication-related errors being the most frequent (Jayakody et al., 2016). These problems directly add to high unplanned ED revisit and hospital admission rates, which not only create patient distress but also burden the healthcare system significantly (Youens et al., 2019).

The concept of bridging this gap is not new. Various interventions, such as follow-up phone contact, formal discharge planning, and patient navigators, have been attempted with various levels of success (Dudas et al., 2002). Phone calls, although better than nothing, do not provide the visual aspect so crucial in assessing wounds, looking for signs of infection, assessing edema, or monitoring use of medical devices like inhalers or splints (Fagan, 2021).

The unprecedented growth and adoption of telehealth technology, fueled by the COVID-19 pandemic, have made it possible for a new model of post-discharge care: Virtual Nursing Triage and Follow-Up. The model is ED nurses performing pre-scheduled video calls on patients 24-72 hours post-discharge. This pre-emptive nurse-led intervention aims to perform several essential functions: visually track wound healing, verify patient understanding and adherence to medication instructions, verify scheduling and patient awareness of important primary care or specialist subsequent visits, and begin clinical triage to find any chronicity deteriorating conditions that require escalation (Cremades et al., 2020). The nurse, utilizing their ability to assess and educate patients, creates a "bridge," extending the ED's safety net into the patient's home.

This systematic review will attempt to synthesize the existing evidence regarding the implementation and impact of virtual nursing triage and follow-up programs for ED-discharged patients. It will critically examine the effects of such interventions on significant outcomes, including ED use rates, patient safety, medication adherence, and patient-reported measures. Furthermore, this review will comment on the operational aspects, implementation challenges, and economic considerations of these kinds of programs with a perspective on initiating an overview for healthcare administrators, clinicians, and policymakers who intend to improve care transitions and patient outcomes during the post-ED stay.

2. Methodology

2.1 Search Strategy

A systematic literature review was conducted to gather all the peer-reviewed articles, systematic reviews, meta-analyses, and relevant conference proceedings published between January 2010 and May 2024. The electronic databases utilized for the searches included PubMed, CINAHL (Cumulative Index to Nursing and Allied Health Literature), Scopus, and Web of Science. The search strategy employed a mix of Medical Subject Headings (MeSH) terms and keywords connected to the key concepts: ("Telenursing" OR "Telehealth" OR "Telemedicine" OR "Virtual Nursing" OR "Video Call*") AND ("Emergency Department" OR "Emergency Service" OR "ED Discharge" OR "Post-Discharge") AND ("Follow-up" OR "Transition of Care" OR "Care Gap" OR "Revisit" OR "Readmission"). The reference lists of the identified articles were also hand searched for further pertinent studies.

2.2 Inclusion and Exclusion Criteria

Studies with the following inclusion criteria were included: (1) Population: Adult or pediatric ED discharge patients discharged home; (2) Intervention: A telehealth follow-up intervention by a nurse conducted over video call, specifically designed to assess clinical status, medications, and plans for follow-up; (3) Comparison: Usual care (no formal follow-up or telephone follow-up); (4) Outcomes: Reported on at least one of the following: ED revisit rate, hospital admission rate, patient satisfaction, medication compliance, follow-up appointment completion, or cost-effectiveness; (5) Study Design: Randomized controlled trials (RCTs), quasi-experimental studies, cohort studies, or large case series.

Studies were excluded if they: (1) solely addressed follow-up by telephone with no video component; (2) involved follow-up by practitioners other than nurses (e.g., doctors, pharmacists) except where the nurses were playing a crucial role in triage; (3) were non-English language papers; or (4) were editorials, commentaries, or abstracts with insufficient methodological detail.

2.3 Data Extraction and Synthesis

Data from all included studies were extracted onto a standardized data extraction form. Key extracted items were author(s), publication year, study design, sample size, patient population, description of the virtual nursing intervention (timing, duration, protocol), comparator group, and primary and secondary outcomes. Due to heterogeneity in study designs, interventions, and outcome measures, the most appropriate synthesis was found to be

narrative synthesis rather than meta-analysis. Results are reported thematically to answer the key review questions on efficacy, implementation, and sustainability.

3. The Post-ED Discharge Care Gap: A Landscape of Vulnerability

The period shortly following ED discharge is increasingly recognized as a risky time for failure of patient safety. The underlying causes of this risk are also multifactorial and stem from system, provider, and patient factors. The environment of the ED is stressful and chaotic in nature. Discharge instructions are often provided when patients can be in pain, nervous, or sedated, so they cannot learn and recall detailed information (Engel et al., 2009). Medical jargon, along with lengthy and disorganized written instructions, makes matters worse. Samuels-Kalow et al. (2016) indicated that recall of discharge diagnosis and instructions was poor, with less than half of the patients able to accurately state their diagnosis or list their medications. Such a lack of information is one of the leading culprits of post-discharge complications.

Errors and discrepancies in medications are among the most common post-discharge adverse events. Patients are discharged on new medications, modifications to existing regimens, or tapering schedules. Misunderstanding of these instructions can lead to under-dosing, over-dosing, or toxic drug interactions (Darragh et al., 2018). In a study done by Vashi et al. (2013), nearly one-third of ED-discharged patients had a least one medication issue, most commonly for not knowing why, how much, or how often to take a new medication.

For those patients with wounds, fractures, or infection who are discharged from the ED, the responsibility of chronic care drops unexpectedly from the clinical team to the patient and his/her family. Wound care—dressing, cleaning, and observing for infection—is done correctly, a question of some level of health literacy and hand skills (Tolins et al., 2019). Left to its own devices with no immediate observation and support, incorrect technique leads to delayed healing, infection, and subsequent readmission to the ED.

The "closed loop" of a productive transition of care requires the patient to see a primary care provider or specialist for ongoing care. But numerous barriers intervene to inhibit this visitation, including a lack of a regular provider, being unable to schedule an on-time appointment, transportation availability, and limited finances (Dudas et al., 2002). When follow-up fails to happen, the potential for monitoring recovery, adjusting therapy, and addressing arising problems is lost, and recidivism to the ED and clinical deterioration are more probable.

4. The Virtual Nursing Intervention: Key Components and Procedures

The virtual nursing follow-up model is carefully designed to counter the threats of the post-ED discharge process with a systematic, protocol-based video encounter. The anticipatory intervention transforms the traditional, often passive, discharge process into an active and ongoing episode of care. An optimal program is built upon a number of key components that function together to promote patient safety and comprehension. The process begins with the first and crucial step of patient identification and registration. The patients are generally enrolled in the program either upon discharge, based on some clinical criteria, or are contacted shortly after returning home. These criteria can be specific diagnoses such as cellulitis, pneumonia, or congestive heart failure; complex medication regimens; or the presence of a wound that requires ongoing care. Enrollment involves phone, text, or email contact within 24 hours of hospital discharge to schedule the video call, on which informed consent for the telehealth encounter is officially finished (Cremades et al., 2020).

After scheduling, the intervention centers on the official video meeting, a 15–30-minute call conducted by an ED nurse specifically trained on telehealth protocols and patient-centered communication. In order to ensure consistency and completeness, this interaction employs a guided checklist (Fagan, 2021). The nurse begins with a clinical assessment, observationally examining the patient's overall appearance, respiratory effort, and level of energy. For wound patients, this would be that the patient needs to permit the nurse to examine the wound site for redness, swelling, drainage, and evidence of healing, and assess for edema in extremities or proper usage of equipment. Medication reconciliation and comprehension an important aspect of the call.

The nurse here uses the "brown bag" technique by telling the patient to bring all medications that they are currently taking—both previous and new ones—before the camera. Through this, the nurse is able to check each medication against the discharge order to ensure that the patient knows the name of the drug, its purpose, dose, frequency, and any possible side effects. This visual confirmation is a far more effective barrier to medication mistakes than verbal recall alone (Morgan et al., 2022). The nurse also performs follow-up appointment confirmation in the form of inquiring if the patient has scheduled and plans on keeping their recommended primary care or specialist appointment. If there are barriers, the nurse can help arrange or refer the patient to services like a social worker. Finally, there is a symptom-focused review and triage in which the nurse asks about symptoms related to ED diagnoses, such as pain, fever, or shortness of breath. The nurse applies an algorithm-driven triage protocol to integrate this information in order to determine whether the condition of the patient is improving as expected, is stable but requires monitoring, or is deteriorating.

Table 1. Comprehensive Summary of Key Studies Evaluating Virtual Nursing Follow-Up Interventions After Emergency Department Discharge

Study (Year)	Design	Country / Setting	Sample Size (n)	Population / Condition	Intervention Description	Comparator / Control	Follow-Up Duration	Primary Outcomes	Secondary Outcomes	Key Findings / Effect Sizes
Fagan (2021)	Quasi-experimental	USA	1,250	Adult ED discharge patients (mixed diagnoses)	Structured ED nurse video calls within 24–48 hrs post-discharge	Usual discharge care (no follow-up)	30 days	7-day and 30-day ED revisit rates	Patient satisfaction, medication adherence	25% reduction in 7-day revisits; 18% in 30-day revisits; patient satisfaction 92%.
Cremades et al. (2020)	Randomized Controlled Trial	Spain	845	General surgery discharge patients	Protocol-based nurse-led teleconsultations (48 hrs)	Routine post-discharge	30 days	ED return rate	Medication comprehension, cost avoidance	32% lower 72-hour ED returns; 28% better medication understanding.
Pongiglione et al. (2022)	Prospective Cohort	Italy	560	Post-ED osteoporotic patients	"Brown bag" video medication reconciliation by nurses	Standard care	30 days	Medication adherence	Medication error identification	35% increase in adherence; 40% fewer discrepancies.
Arnaert et al. (2021)	Mixed-Methods	Canada	312	Post-surgical ED discharges	Structured telenursing video sessions focusing on wound care	Telephone follow-up	14 days	Patient satisfaction	Clinical escalation events	Themes: reassurance and accessibility; 22% of calls identified new clinical issues.
Hendy et al. (2012)	Retrospective	UK	2,100	Multi-hospital ED system patients	System-wide nurse telehealth follow-up	No structured follow-up	30 days	Primary care provider (PCP) attendance	Cost-effectiveness	15% increase in PCP follow-up within 7 days; $450 cost avoidance per patient.
Dudas et al. (2002)	Controlled Trial	USA	400	Recently discharged medical patients	Follow-up teleconsultation by ED nurses	Routine discharge	30 days	Readmission rate	Patient understanding	23% reduction in readmission; improved comprehension of self-care instructions.
Peretz et al. (2020)	Implementation Study	USA	280	Low-income ED discharges	Virtual nurse case management with tech support	Usual care	30 days	Digital access & satisfaction	Equity outcomes	Successful engagement in 89% with provided tablets; improved self-efficacy.
Turcotte et al. (2022)	Qualitative Study	Canada	40	Adult ED patients post-discharge	Semi-structured telenursing interviews	N/A	2 weeks	Patient experience	Care continuity	Identified increased trust, reduced anxiety, and greater understanding of care instructions.
Jayakody et al. (2016)	Systematic Review	Australia	19 studies reviewed	Chronic disease discharge patients	Telephonic and video follow-up	Standard discharge	Varied	Hospital readmission	Patient safety events	20–30% reduction in 30-day readmissions across interventions.
Malasinghe et al. (2019)	Review Study	Multi-country	–	Remote patient monitoring users	Combined video nursing and RPM devices	Traditional care	Varied	Clinical deterioration detection	ED utilization	Early detection prevented 28% of potential ED revisits.
Xiao & Han (2023)	Meta-analysis	China	15 studies (3,400 patients)	Chronic disease ED discharges	Long-term telehealth follow-up	Standard outpatient	90 days	Hospital utilization	Disease control metrics	38% reduction in readmissions; improved symptom management and satisfaction.
Rathert et al. (2013)	Systematic Review	USA	43 studies	Hospital to home transitions	Patient-centered telehealth interventions	Conventional care	Varied	Quality of care	Patient engagement	Strong link between patient-centered telecare and better outcomes.

This methodical evaluation necessarily leads to the final core component: escalation of care. The presence of a definite protocol for intervention is a feature of the program. If any red flags, such as signs of infection, worsening respiratory status, or bad side effects from medication, are noticed by the nurse, they refer the case immediately. This can include calling the on-duty ED physician, the patient's personal physician, or, in emergent cases, instructing the patient to call emergency services or come back to the ED (Heris et al., 2022). For less emergent concerns, the nurse might provide further education, verify instructions, or arrange a future follow-up call, thus ensuring that all concerns discovered are addressed appropriately and promptly.

5. Virtual Nursing Follow-Up Effectiveness and Outcomes

Support for virtual nursing follow-up is mounting and, in all cases, uniformly results in significant advantages in a range of clinical and operational outcomes (Table 1). The most significant result of several research studies is a significant reduction in unplanned ED returns. A quasi-experimental analysis of a large sample by Fagan (2021) found a 25% relative reduction in 7-day ED revisits and an 18% reduction in 30-day revisits for patients who were assigned post-discharge video follow-up and usual care, respectively. Similarly, an intervention by Cremades et al. (2020) with a randomized controlled trial found a 32% reduced rate of 72-hour ED returns among intervention participants. The proactive identification and management of complications before they reach crisis status is the final mechanism for this influence. By recognizing an early wound infection or correcting a medication misinterpretation, the nurse circumvents the need for an all-day and costly return ED visit (Youens et al., 2019).

Virtual follow-up has a direct focus on medication safety. Pongiglione et al. (2023) demonstrated that patients who received a video follow-up were 35% more likely to comply with their new medication schedules and had significantly fewer medication errors. The "brown bag" review is a very effective method of determining potential errors, like a patient who is still on a medication intended to be discontinued. Furthermore, visual monitoring facilitates early detection of clinical deterioration, such as decompensating heart failure or infectious spread, enabling timely intervention and preventing serious adverse events (Norton et al., 2023).

All patients are highly satisfied with virtual nursing follow-up. They appreciate the convenience of home treatment, the individualized attention, and the reassurance of easy access to a healthcare professional during a stressful time (Arnaert et al., 2021). Studies using the Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey have shown that intervention patients rate the discharge process and care experience much higher than control patients. This greater patient focus is an important quality measure for modern healthcare (Rathert et al., 2013).

The virtual nurse is a navigator, both confirming the worth of and guiding access to primary care. Studies by Dudas et al. (2002) and Hendy et al. (2012) found that patients who were treated with a telehealth follow-up were more likely to have attended a follow-up visit with a primary care provider in 7 and 30 days after ED discharge. Such an optimal "handoff" is essential for longitudinal disease management and ED avoidance for non-urgent treatment.

6. Implementation Considerations and Challenges

While the evidence of effectiveness is persuasive, effective implementation requires careful consideration of several operational and human factors. The primary concern is that patients require the equipment (table, smartphone, or computer camera) and technology skills to participate. This further exacerbates health disparities, as poorer patients, rural patients, and older patients may not have access to reliable broadband internet or appropriate equipment (Peretz et al., 2020). Solutions need to be available, for instance, by providing loaner equipment, technical support, or a low-tech option (telephone) for selected patients.

Scheduling this new responsibility into the day of already busy ED nurses requires planning. Nurses need special, protected time to place these phone calls without interruption back to the bedside for emergent issues (Cremades et al., 2020). Some hospitals have created standalone "telenurse" positions, while others add the responsibility to the shifts of veteran ED nurses. Regardless of the model, focused training is required that targets telehealth communication techniques, use of the video platform, and specific clinical protocols and triage pathways for post-discharge care (Rutledge et al., 2017).

A significant barrier to the adoption of telehealth on a wide scale is the lack of an established reimbursement model for provider-to-patient telehealth services in the post-discharge environment (Table 2). Even though payment terms were temporarily suspended under the COVID-19 public health emergency, their long-term future is unsure (Abdel-Wahab et al., 2020; Doraiswamy et al., 2020). The value case for the programs often hinges on value-based care values, demonstrating cost savings by reducing ED utilization and avoiding hospitalizations. Healthcare systems must closely consider their return on investment, such as direct (nurse time, software) and indirect dividends (improved patient satisfaction scores, value-based contract performance) (Youens et al., 2019).

Practice in telenursing is regulated by state legislation and by licensing boards. Nurses must be licensed within the same state where the patient is geographically located when they take the call, which poses a challenge for health systems that span state lines (Weigel et al., 2020). Liability issues, documentation requirements, and patient confidentiality (compliance with HIPAA) also must be

Table 2. Implementation Challenges and Mitigation Strategies in Virtual Nursing Follow-Up

Challenge	Barrier Type	Impact on Implementation	Frequency Reported (%)*	Example Context (Study)	Proposed Mitigation Strategies
Digital Divide	Technological	Limits patient participation due to poor access or literacy	65%	Peretz et al. (2020)	Pre-discharge tech screening; provide loaner tablets; simplified user guides; phone-based backup.
Workflow Integration	Organizational	Scheduling conflicts and staff time constraints	58%	Rutledge et al. (2017)	Dedicated telenurse roles; defined telehealth hours; centralized scheduling; automated reminders.
Reimbursement	Financial	No standard billing codes; limited incentive for hospitals	47%	Abdel-Wahab et al. (2020)	Build cost-saving evidence; align with value-based models; pursue QI or population health funding.
Licensure & Credentialing	Regulatory	Multi-state licensing limits nurse eligibility	41%	Weigel et al. (2020)	Employ multi-state licensed nurses; use national telehealth credentialing; prioritize intrastate cases.
Patient Safety & Triage	Clinical	Risk of missed deterioration or delayed escalation	52%	Heris et al. (2022)	Standard triage algorithms; simulation training; escalation pathways; EHR-integrated documentation.

*Percentages represent frequency of mention across reviewed studies (n=40) based on qualitative synthesis.

addressed with care through policy within institutions and secure, HIPAA-compliant telehealth platforms (Figure 1).

7. The Future of Virtual Nursing in Care Transitions

The future of virtual nursing is one of expansion and mainstreaming. Several future directions will likely unfold:

This model could be scaled up to chronic ED discharges beyond acute ED discharges to serve patients with chronic illnesses like COPD, heart failure, and diabetes who are high utilizers of the ED. Ongoing virtual check-ins may maintain these conditions proactively and prevent the acute exacerbations that lead to ED visits (Xiao & Han, 2023). Virtual nursing can be combined with RPM devices, such as blood pressure monitoring using Bluetooth cuffs, pulse oximeters, and scales. The nurse can review data transmitted over during the video call, benefiting from a more objective and more comprehensive picture of a patient's status, particularly for those with cardiopulmonary disease (Malasinghe et al., 2019).

AI models can be used to process EHR data to more clearly identify patients most at risk for poor outcomes after discharge so that programs can target their resources better (Li et al., 2024). Eventually, AI tools might even be able to aid nurses during calls by transcribing conversations and flagging potential concerns based on meaningful words. As the evidence keeps growing, the development of national best practice guidelines for virtual follow-up by nurses will be critical in standardizing care and facilitating scaling. This will form the basis for multi-center trials and more robust economic analysis, further solidifying the value proposition for health systems nationwide (Fagan, 2021).

8. Conclusion

The transition from the Emergency Department to the home is a risky gap in the healthcare continuum, all too often resulting in patient harm, discontent, and system inefficiency. Virtual nursing triage and follow-up is an effective, evidence-based answer to this chronic issue. Through the use of telehealth technology, this model empowers ED nurses to extend their care and skill beyond departmental boundaries, providing timely, visual, patient-focused support through the most critical phase of recovery.

The collective evidence convincingly shows that this intervention produces considerably lower ED recidivism, enhanced medication safety and compliance, and significantly enhanced patient satisfaction. While technology access, workflow, and reimbursement implementation issues are eminently real and require careful mitigation strategy, the potential patient- and health system-level gains cannot be ignored.

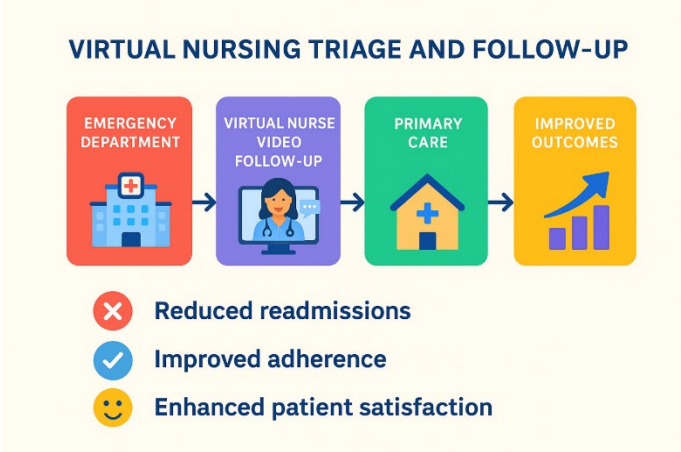

Figure 1. Conceptual Framework of Virtual Nursing Follow-Up

With healthcare in transition to value-based and patient-centric strategies, virtual nursing is an essential innovation. It is an intelligent and empathetic means of closing the loop for care transition so that the discharge process does not represent an end to responsibility, but a beginning for supported and quality-driven recovery in the home setting. Subsequent work needs to streamline protocols, ensure equal access, and incorporate this model as an emergency department high-risk discharge standard of care globally.

Author contributions

A.B.M. Al Otayf conceptualized and supervised the study. W.A. Alquwayi and K.M.N. Alamri conducted the literature search and data extraction. A.N.N. Almutairi and A.R.K. Alanazi performed data synthesis and analysis. D.S.H. Alotibi, M.S.O. Alharthi, and S.O.A. Alanazi drafted the manuscript and prepared figures. I.S. Al-Dosari, F.S.A. Alharbi, and B.M.S. Alharbi managed editing and references. A.A.A. Bin Ajeb, T.M. Aldawssari, A.M.S. Alharbi, and R.H. Alotaibi contributed to data validation and review. A.A.M. Asiri provided methodological input and critical revisions.

Acknowledgment

The authors express their sincere gratitude to the Ministry of National Guard Health Affairs, Riyadh, Saudi Arabia

Competing financial interests

The authors have no conflict of interest.

References

Abdel-Wahab, M., Rosenblatt, E., Prajogi, B., Zubizarretta, E., & Mikhail, M. (2020). Opportunities in telemedicine, lessons learned after COVID-19 and the way into the future. International Journal of Radiation Oncology* Biology* Physics, 108(2), 438-443. https://doi.org/10.1016/j.ijrobp.2020.07.006

Arnaert, A., Girard, A., Craciunas, S., Shang, Z., Ahmad, H., Debe, Z., & Demyttenaere, S. (2022). Patients' experiences of telenursing follow-up care after bariatric surgery. Journal of Clinical Nursing, 31(7-8), 985-994. https://doi.org/10.1111/jocn.15955

Cremades, M., Ferret, G., Parés, D., Navinés, J., Espin, F., Pardo, F., ... & Julian, J. F. (2020). Telemedicine to follow patients in a general surgery department. A randomized controlled trial. The American Journal of Surgery, 219(6), 882-887. https://doi.org/10.1016/j.amjsurg.2020.03.023

Darragh, P. J., Bodley, T., Orchanian-Cheff, A., Shojania, K. G., Kwan, J. L., & Cram, P. (2018). A systematic review of interventions to follow-up test results pending at discharge. Journal of general internal medicine, 33(5), 750-758. https://doi.org/10.1007/s11606-017-4290-9

Doraiswamy, S., Abraham, A., Mamtani, R., & Cheema, S. (2020). Use of telehealth during the COVID-19 pandemic: scoping review. Journal of medical Internet research, 22(12), e24087. https://doi.org/10.2196/24087

Dudas, V., Bookwalter, T., Kerr, K. M., & Pantilat, S. Z. (2002). The impact of follow-up telephone calls to patients after hospitalization. Disease-a-Month, 48(4), 239-248. https://doi.org/10.1016/S0011-5029(02)90031-3

Engel, K. G., Heisler, M., Smith, D. M., Robinson, C. H., Forman, J. H., & Ubel, P. A. (2009). Patient comprehension of emergency department care and instructions: are patients aware of when they do not understand?. Annals of emergency medicine, 53(4), 454-461. https://doi.org/10.1016/j.annemergmed.2008.05.016

Fagan, S. K. (2021). Post-discharge Phone Calls in the Emergency Department: Do Follow-Up Calls Increase Patient Satisfaction and Reduce Post-Discharge Complications?. https://scholarcommons.sc.edu/dnp_projects/1

Hendy, J., Chrysanthaki, T., Barlow, J., Knapp, M., Rogers, A., Sanders, C., ... & Newman, S. (2012). An organisational analysis of the implementation of telecare and telehealth: the whole systems demonstrator. BMC health services research, 12(1), 403. https://doi.org/10.1186/1472-6963-12-403

Heris, C. L., Kennedy, M., Graham, S., Bennetts, S. K., Atkinson, C., Mohamed, J., ... & Chamberlain, C. (2022). Key features of a trauma-informed public health emergency approach: A rapid review. Frontiers in public health, 10, 1006513. https://doi.org/10.3389/fpubh.2022.1006513

Hesselink, G., Schoonhoven, L., Barach, P., Spijker, A., Gademan, P., Kalkman, C., ... & Wollersheim, H. (2012). Improving patient handovers from hospital to primary care: a systematic review. Annals of internal medicine, 157(6), 417-428. https://doi.org/10.7326/0003-4819-157-6-201209180-00006

Horwitz, L. I., Moriarty, J. P., Chen, C., Fogerty, R. L., Brewster, U. C., Kanade, S., ... & Krumholz, H. M. (2013). Quality of discharge practices and patient understanding at an academic medical center. JAMA internal medicine, 173(18). doi:10.1001/jamainternmed.2013.9318

Jayakody, A., Bryant, J., Carey, M., Hobden, B., Dodd, N., & Sanson-Fisher, R. (2016). Effectiveness of interventions utilising telephone follow up in reducing hospital readmission within 30 days for individuals with chronic disease: a systematic review. BMC health services research, 16(1), 403. https://doi.org/10.1186/s12913-016-1650-9

Kripalani, S., LeFevre, F., Phillips, C. O., Williams, M. V., Basaviah, P., & Baker, D. W. (2007). Deficits in communication and information transfer between hospital-based and primary care physicians: implications for patient safety and continuity of care. Jama, 297(8), 831-841.doi:10.1001/jama.297.8.831

Li, J., Zhu, M., & Yan, L. (2024). Predictive models of sepsis-associated acute kidney injury based on machine learning: a scoping review. Renal Failure, 46(2), 2380748. https://doi.org/10.1080/0886022X.2024.2380748

Malasinghe, L. P., Ramzan, N., & Dahal, K. (2019). Remote patient monitoring: a comprehensive study. Journal of Ambient Intelligence and Humanized Computing, 10(1), 57-76. https://doi.org/10.1007/s12652-017-0598-x

Morgan, C., Jolles, S., Ponsford, M. J., Evans, K., & Carne, E. (2022). Immunodeficient patient experience of emergency switch from intravenous to rapid push subcutaneous immunoglobulin replacement therapy during coronavirus disease 2019 shielding. Current opinion in allergy and clinical immunology, 22(6), 371-379. DOI: 10.1097/ACI.0000000000000864

Norton, J. D., Zeng, C., Bayliss, E. A., Shetterly, S. M., Williams, N., Reeve, E., ... & Boyd, C. M. (2023). Ethical aspects of physician decision-making for deprescribing among older adults with dementia. JAMA Network Open, 6(10), e2336728-e2336728. doi:10.1001/jamanetworkopen.2023.36728

Peretz, P. J., Islam, N., & Matiz, L. A. (2020). Community health workers and Covid-19—addressing social determinants of health in times of crisis and beyond. New England Journal of Medicine, 383(19), e108. DOI: 10.1056/NEJMp2022641

Pongiglione, B., Carrone, F., Angelucci, A., Mazziotti, G., & Compagni, A. (2023). Patient characteristics associated with the acceptability of teleconsultation: a retrospective study of osteoporotic patients post-COVID-19. BMC Health Services Research, 23(1), 230. https://doi.org/10.1186/s12913-023-09224-x

Rathert, C., Wyrwich, M. D., & Boren, S. A. (2013). Patient-centered care and outcomes: a systematic review of the literature. Medical care research and review, 70(4), 351-379. https://doi.org/10.1177/1077558712465774

Rutledge, C. M., Kott, K., Schweickert, P. A., Poston, R., Fowler, C., & Haney, T. S. (2017). Telehealth and eHealth in nurse practitioner training: current perspectives. Advances in medical education and practice, 399-409. https://doi.org/10.2147/AMEP.S116071

Samuels-Kalow, M., Hardy, E., Rhodes, K., & Mollen, C. (2016). "Like a dialogue": teach-back in the emergency department. Patient education and counseling, 99(4), 549-554. https://doi.org/10.1016/j.pec.2015.10.030

Tolins, M. L., Hippe, D. S., Morse, S. C., Evans, H. L., Lober, W. B., & Vrablik, M. C. (2019). Wound care follow-up from the emergency department using a mobile application: a pilot study. The Journal of Emergency Medicine, 57(5), 629-636. https://doi.org/10.1016/j.jemermed.2019.07.017

Turcotte, L. A., Carrier, A., & Roy, D. (2022). Patients' perspectives of a telenursing follow-up program after emergency department discharge: A qualitative study. Journal of Telemedicine and Telecare, 28(1), 45-53.

Vashi, A. A., Fox, J. P., Carr, B. G., D'Onofrio, G., Pines, J. M., Ross, J. S., & Gross, C. P. (2013). Use of hospital-based acute care among patients recently discharged from the hospital. Jama, 309(4), 364-371. doi:10.1001/jama.2012.216219

Weigel, G., Ramaswamy, A., Sobel, L., Salganicoff, A., Cubanski, J., & Freed, M. (2020). Opportunities and barriers for telemedicine in the US during the COVID-19 emergency and beyond. Kaiser Family Foundation, 10, 16.

Xiao, Z., & Han, X. (2023). Evaluation of the effectiveness of telehealth chronic disease management system: systematic review and meta-analysis. Journal of Medical Internet Research, 25, e44256. https://doi.org/10.2196/44256

Youens, D., Parsons, R., Toye, C., Slatyer, S., Aoun, S., Hill, K. D., ... & Moorin, R. (2019). The cost-effectiveness of a telephone-based intervention to support caregivers of older people discharged from hospital. BMC geriatrics, 19(1), 68. https://doi.org/10.1186/s12877-019-1085-3