Elderly Health Journal 2026; 12(1): 72-79.
Shahid Sadoughi University of Medical Sciences, Yazd, Iran
Journal Website : http://ehj.ssu.ac.ir

Protocol Study

Effectiveness of Tele-nursing Supportive Educational Intervention Based on Health Belief Model on Preventive Behaviors of Urinary Tract Infection in People with Spinal Cord Injury: A Protocol Study

Alireza Mohammadi [1], Fatemeh Karamizadeh [1], Zohreh Karimiankakolaki [2,3*]

1. Department of Nursing, Shk.C., Islamic Azad University, Shahrekord, Iran
2. Department of Health, Shk.C., Islamic Azad University, Shahrekord, Iran
3. Social Determinants of Health Research Center, Shk.C., Islamic Azad University, Shahrekord, Iran

* **Corresponding Author:** Social Determinants of Health Research Center, Shk.C., Islamic Azad University, Shahrekord, Iran. **Tel:** +98 9132366910**, Email address**: Zohrehkarimian68@gmail.com

Article history
Received 22 May 2026
Accepted 18 Jun 2026

Citation: Mohammadi A, Karamizadeh F, Karimiankakolaki Z. Effectiveness of tele-nursing supportive educational intervention based on health belief model on preventive behaviors of urinary tract infection in people with spinal cord injury: a protocol study. Elderly Health Journal. 2026; 12(1): 72-79.

A B S T R A C T

Introduction: Urinary tract infection (UTI) is one of the complications of people with spinal cord injury (SCI). The present study aims to design a protocol for the effectiveness of a telenursing educational intervention based on the health belief model (HBM) on preventive behaviors against UTI in people with SCI in Iran.

Methods: The present study is a randomized controlled trial protocol that will be conducted in 44 individuals with SCI and UTI in rehabilitation centers in Shahrekord, Iran in 2025. The design of this study includes three phases. The first phase of the study is to design a researcher-made questionnaire based on the Health Belief Model (HBM) to assess knowledge, attitude, and preventive behavior of UTI in people with SCI. In the second phase of the study, a telenursing educational-support program will be designed. The third phase will include a pre-test, implementation of the educational intervention, and a post-test two months after the intervention in the intervention and control groups. Data analysis will be performed with SPSS-23 software.

Discussion: This study presents a novel approach to promote preventive behaviors against UTI in individuals with SCI by designing an integrated educational protocol based on telenursing and the HBM. The findings of this study can lead to a significant reduction in complications from UTI and improve the quality of life of these patients.

Keywords: Health Belief Model, Urinary Tract Infection, Spinal Cord Injury, Education, Telenursing

Introduction

Many people live with the consequences of spinal cord injury (SCI). The incidence varies greatly from country to country, depending on the cause, study method, and data source. International literature indicates an incidence rate ranging from approximately 9 to 54 per million person-years (1). In the United States, the most recent estimate of annual incidence is approximately 17,900 new cases each year, which translates to about 54 cases per one million people (1). Trauma is the most common cause of SCI, and about 78% of new cases since 2015 are male, with the average age at injury having increased to 43 years (1).

People with SCI are at significantly increased risk of developing urinary tract infections (UTIs). Historically, during World War I, approximately 80%

Copyright © 2026 The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial 4.0 International License (http://creativecommons.org/licenses/by-nc/4.0/) which permits copy and redistribute the material just in noncommercial usages, provided the original work is properly cite.

[Downloaded from ehj.ssu.ac.ir on 2026-09-08]

[DOI: 10.18502/ehj.v12i1.21909]

of those with SCI died from pyelonephritis; however, advances in urological care have substantially reduced mortality (2). SCI alters the dynamics of urinary emptying and often requires catheterization for bladder management (2). UTIs remain the most frequent type of infection in this population and are a leading cause of morbidity, with catheter use being a primary contributing factor (3).

UTI is responsible for major morbidity in patients with SCI (4). Several factors contribute to the increased risk of infection in the neurogenic bladder; incomplete voiding, increased intravesical pressure, and catheter use are key contributors to symptomatic UTIs (4). Repeated exposure to antibiotics increases the risk of infection by resistant organisms (5). UTI interferes with rehabilitation and may lead to secondary urological complications; classic symptoms of UTI are often unreliable indicators in SCI patients with neurogenic bladder, making diagnosis challenging (5).

Current evidence emphasizes that bladder emptying methods should be optimized and that only patients with signs or symptoms suggestive of UTI should be treated, as asymptomatic bacteriuria does not warrant antibiotic therapy (6). Intermittent catheterization remains the most recommended bladder management method, and antibiotic treatment should be based on urine culture results to minimize unnecessary exposure and reduce the risk of antimicrobial resistance (6).

Educational interventions are effective in changing patient behavior, and a study by Taghdisi et al., has indicated that a health education program designed based on the health belief model (HBM) is effective in promoting preventive behaviors against UTIs, and educational control, monitoring, and follow-up are recommended (7).

One of the basic tools in changing lifestyle is the existence of a patient education program as part of care, there are several methods for patient education. Traditional methods cannot fully respond appropriately to the changes and rapid growth of information and educational needs of the community of patients with chronic diseases (8). Education through multimedia software is one of the new methods of education that has affected all aspects of human life with the advent of computers and the increasing spread of information and communication (9). Education and support are two important pillars that play a crucial role in patient rehabilitation. Regular remote follow-up or telenursing, as an essential part of healthcare services, helps patients actively participate in the treatment process and successfully manage chronic conditions. A systematic review by Lee et al. demonstrated that tele rehabilitation interventions produce statistically significant positive outcomes in various aspects of spinal cord injury management, including self-management skills and quality of life (10). According to Tabari et al., nursing teleconsultation uses information technology to establish communication between the patient and the nurse in different geographic locations, enabling guidance on bladder and bowel care, skin management, and other essential self-care activities (11). In the meantime, telephone follow-up is a very useful and inexpensive method for assessing patients' needs and helping callers with care problems (12).

Unlike primary prevention studies that enroll healthy individuals, this study focuses on secondary prevention. Patients with SCI who already have a mild UTI are at high risk of developing severe complications and recurrent infections. Therefore, we target this high-risk group to teach preventive behaviors that reduce disease progression and recurrence.

Considering the complications of UTI in people with SCI and mortality from this infection, and the fact that UTI can be prevented by changing behavior and lifestyle, the present study aims to design a protocol for the effectiveness of a telenursing educational intervention based on the HBM on preventive behaviors against UTI in people with SCI in Iran.

Methods

Study Design

This randomized controlled trial is a protocol design for a tele-nursing supportive educational intervention based on HBM on preventive behaviors of UTI in people with SCI.

Aim

The aim of the present study is to determine the effect of telenursing education based on the HBM on preventive behaviors against UTI in people with SCI.

Setting

The present study is an interventional study with pre-test and post-test that will be conducted in rehabilitation centers in Shahrekord, Iran, with the target population of people with SCI and UTI referring to these centers.

Sample size

Due to the lack of any similar interventional study with an identical design (combining HBM and telenursing) in the SCI population, the sample size is calculated based on the study by Seyed-Rajabizadeh et al., (13). Although this study is conducted on pregnant women, it is used for the following reasons: (a) the preventive behaviors are conceptually identical across both populations; (b) no alternative study exists in SCI patients; and (c) using an effect size from a more responsive population provides a conservative estimate for our SCI population. Based on $\alpha = 0.05$, $\beta = 80\%$, SD = 4, a detectable difference of 3.5 points in behavior score, and accounting for 10% dropout, 22 patients per group (total N = 44) are calculated.

[Downloaded from ehj.ssu.ac.ir on 2026-09-08]

[DOI: 10.18502/ehj.v12i1.21909]

Participants

Participants are individuals with SCI who will be referred to rehabilitation centers in Shahrekord, Iran, during the year 2026. The inclusion criteria for the study include: having a SCI, being literate, not having diabetes, currently, having a mild UTI at the time of enrollment (diagnosed by a physician and confirmed by urinalysis), having a smart phone, and consent to participate in the study. The exclusion criteria include: severe exacerbation of UTI with symptoms and complications (diagnosed by a doctor and urinalysis), having a specific disease or emergency problems, having diabetes, and unwillingness to continue participation. The study focuses on secondary prevention, meaning the educational intervention is designed to prevent progression of the current mild infection to severe UTI (e.g., pyelonephritis) and to reduce the risk of recurrent UTIs in the future. After treatment of the mild infection according to standard medical protocol, participants will be followed for preventive behaviors and subsequent UTI episodes.

Randomization

Participants will be allocated to intervention and control groups based on computer randomization numbers. Allocated numbers will be kept in sealed envelopes. This trial will be conducted in accordance with the CONSORT statement.

Blinding

The laboratory technician performing urinalysis and the statistician analyzing the data will be blinded to group allocation (intervention vs. control). Due to the nature of the intervention (telenursing), participants and the nurse providing the phone calls cannot be blinded. However, outcome assessors (laboratory technician) and data analysts (statistician) will have no information about group assignment.

Study procedure

The design of this study includes three phases. The first phase of the study is to design a researcher-made questionnaire based on the HBM to assess knowledge, attitude, and preventive behavior of UTI in people with SCI. In the second phase of the study, a telenursing educational-support program will be designed. This intervention will be designed based on a review of various studies and taking into account the opinions of a panel of experts in health education and health promotion, nursing, and occupational therapy, which will include educational sessions with the presence of physicians, nurses, and occupational therapy service providers. To follow up on the education, reminder messages and phone calls will be provided to the participants. The third phase will include a pre-test, implementation of the educational intervention, and a post-test two months after the intervention in the intervention and control groups.

Phase I: Designing a researcher-made questionnaire

The data collection tool is a researcher-made questionnaire based on the HBM. The questionnaire consists of four parts. The first part collects demographic information, including age, education, occupation, economic status, marital status, and place of residence. The second part assesses knowledge of the symptoms and complications of UTIs. The third part measures the attitude constructs of the HBM, namely perceived susceptibility, perceived severity, perceived benefits and perceived barriers. The fourth part includes questions related to preventive behaviors, covering clothing habits, eating habits, urinary habits, hygiene practices, and sexual behaviors. The validity of the questionnaire will be assessed by a panel of experts, including an occupational therapy specialist, as well as experts in health education and promotion, and nursing education. Content validity will be quantified using the Content Validity Index and Content Validity Ratio. Reliability will be evaluated in a pilot study using Cronbach's alpha coefficient.

Phase II: Designing a tele-nursing supportive educational intervention

Educational content will be designed based on a review of documents and opinions of a panel of health education and health promotion experts, nursing education, and occupational therapy specialists, and by including appropriate educational content based on the HBM through lectures, group discussions, and practical demonstrations.

In this regard, information related to the symptoms and complications of UTI will be considered for the awareness structure (for example, frequent urination and burning sensation in the urine are symptoms of UTI) and will be presented in the form of lectures and group discussions.

In order to change attitudes based on the HBM regarding beliefs related to UTI, content will be presented through group discussions, images, and animations.

To create preventive behavior, simple steps to prevent UTI related to dietary habits (e.g., drinking 8 glasses of water daily), clothing (e.g., wearing loose pants), hygiene habits (e.g., wiping from front to back after defecation), urinary habits (e.g., not holding urine), catheterization habits (e.g., changing catheters on time), and sexual habits (e.g., urinating before and immediately after intercourse) will be presented in the

[Downloaded from ehj.ssu.ac.ir on 2026-09-08]

[DOI: 10.18502/ehj.v12i1.21909]

form of a PowerPoint presentation and practical demonstration.

To follow up and maintain the training through telenursing and telephone calls with the participants, educational tips will be reviewed and reminded. The nurse's contact number will also be provided to participants for any questions and communication.

To provide a supportive intervention, educational content will be presented in a separate session for caregivers of people with SCI, and they will be taught preventive behaviors related to caregivers, including correct catheterization. Details of the educational intervention are listed in Table 1.

The educational content will be reviewed using the Suitability Assessment Material (SAM) evaluation tool with expert opinions, and media readability will be assessed using the Fogg method and educational level will be assessed using the Cloze method.

Schedule of telenursing follow-up:

- Phone calls: Weekly for 8 consecutive weeks. Each call will last 15-20 minutes.
- Text reminder messages: Every three days (e.g., Saturday and Wednesday).
- Responsible for calls: The principal researcher (a trained nurse in SCI care).
- Call structure: Semi-structured using a pre-defined checklist covering review of previous educational content, answering patient questions, and reminding preventive behaviors.

Table1. Tele-nursing supportive educational intervention

Type of training	Training content	Training method
Knowledge intervention	In this regard, information related to the symptoms and complications of UTI will be considered for the awareness structure (for example, frequent urination and burning sensation in the urine are symptoms of urinary tract infection)	Lecture, group discussion, question and answer
Attitude change intervention	Perceived Barriers (e.g., simplifying catheterization procedures regarding the burden and difficulty of catheterization) Perceived Benefits (e.g., emphasizing urinary health to prevent hospitalization) Perceived Susceptibility (e.g., emphasizing being at risk for UTI due to SCI) Perceived Severity (e.g., emphasizing dangerous complications of urinary tract infection)	Group discussion, questions and answers, images, animation, practical demonstration
Behavior change intervention	Dietary habits (e.g., drinking 8 glasses of water daily), clothing (e.g., wearing loose pants), hygiene habits (e.g., wiping from front to back after defecation), urinary habits (e.g., not holding urine), catheterization habits (e.g., changing catheters on time), and sexual habits (e.g., urinating before and immediately after intercourse)	PowerPoint, practical demonstration
Telenursing intervention	Making telephone calls to participants to provide training and follow up on training. Also providing the researcher's contact number for any questions and answers.	Phone call - questions and answers
Reminder intervention	Reminding and retaining training through phone calls and training groups on the virtual platform	Phone call - Q&A in virtual platform group
Supportive intervention	Providing educational content for companions or families of people with SCI to prevent urinary tract infections regarding behaviors that these people engage in (for example, teaching proper catheterization step by step)	PowerPoint, practical demonstration

[Downloaded from ehj.ssu.ac.ir on 2026-09-08]

[DOI: 10.18502/ehj.v12i1.21909]

For participants in the intervention group, if their primary caregiver provides written informed consent, a separate 60-minute in-person training session will be held at the rehabilitation center. This session will be delivered by the principal researcher (a nurse) using PowerPoint slides and practical demonstration. Caregivers are not randomized separately. Only caregivers of patients in the intervention group receive this training. Caregiver training content includes:

- Proper catheterization techniques (step-by-step)
- Warning signs of severe UTI (fever, chills, flank pain)
- Emergency actions when danger signs are observed
- How to assist the patient with daily preventive behaviors

Expert's team

The content and formal validity of the educational program will be evaluated and the comments received from the expert panel will be presented. The expert panel will include 4 experts from the field of health education and health promotion, 3 experts from the field of nursing, a physician, and an occupational therapist.

Phase III: Implementation of educational intervention

At this stage, a randomized controlled trial will be designed to evaluate the effectiveness of the developed protocol. Participants will be randomly divided into two groups. In the experimental group, our designed protocol will be implemented, and the control group will receive usual care only (standard discharge instructions and routine clinic follow-up provided by the rehabilitation center). They will not receive the telenursing intervention during the study period. However, for ethical reasons, all educational materials (including pamphlets, multimedia files, and the educational program link) will be provided to the control group after completion of the final post-test assessment.

Assessment tool

Researcher-made questionnaire based on the HBM

This questionnaire includes several sections of demographic information, knowledge, attitude (health belief structures including perceived susceptibility, perceived severity, perceived barriers, and perceived benefits), and behavior, which will be designed and validated according to the opinions of health education and nursing experts.

Urinalysis

Urinalysis will be used to assess the white blood cell count and urinary bacteria before and after the intervention. After obtaining informed consent from the participants, urine samples will be collected by midstream or catheter sampling in the pre-test and post-test phases. Urine samples will be immediately sent to the laboratory and analyzed microscopically by a laboratory technician after centrifugation for leukocyte and bacterial counts. A positive criterion for leukocytes is the presence of five cells in a microscopic layer, for bacteria, the presence of any number of bacteria, and for blood, the presence of at least +1 blood.

Outcome measures

Primary Outcome: Mean change in preventive behavior score (measured by the researcher-made questionnaire based on the HBM from baseline to two months' post-intervention.

Secondary Outcomes:

1. Changes in knowledge and HBM constructs including perceived susceptibility, perceived severity, perceived benefits and perceived barriers. These variables will be assessed by the researcher-made questionnaire for the prevention of UTI based on the HBM in the pre-test and post-test stages.
2. Changes in urinalysis parameters**:** leukocyte count, bacteriuria, and hematuria:
   - Urine leukocytes**:** will be assessed by urinalysis in the pre-test and post-test stages. The presence of 5 cells per microscopic high-power field will be considered a positive criterion.
   - Urine bacteria: will be assessed by urinalysis in the pre-test and post-test stages. The presence of any number of bacteria will be considered a positive criterion.
   - Blood in urine (hematuria**):** will be assessed by urinalysis in the pre-test and post-test stages. The presence of 1+ blood will be considered a positive criterion.

Statistical analysis

Quantitative data will be reported as mean ± SD and qualitative data as frequency (%). Normality will be assessed using the Shapiro-Wilk test. For baseline comparability, independent t-tests (for continuous variables) and Chi-square tests (for categorical variables) will be used to compare demographic and clinical characteristics between groups, and any variable showing a significant difference ($p < 0.10$) will be adjusted as a covariate in subsequent analyses. To assess the intervention effect, Analysis of Covariance will be used to compare post-intervention outcomes between groups while adjusting for baseline values, and paired t-tests will be used for within-group changes over time (pre-test to post-test). Missing data will be handled using multiple imputation under an intention-to-treat analysis. Effect size (Cohen's d) will be calculated for between-group differences, with values of 0.2, 0.5, and 0.8 interpreted as small, medium, and large effects, respectively. To control for Type I error due to multiple outcomes, a Bonferroni

[Downloaded from ehj.ssu.ac.ir on 2026-09-08]

[DOI: 10.18502/ehj.v12i1.21909]

correction will be applied, and a two-tailed p-value < 0.01 will be considered statistically significant for secondary outcomes. Exploratory subgroup analyses will be conducted based on level of injury (cervical vs. thoracic/lumbar) and method of bladder emptying (indwelling catheter vs. intermittent catheterization vs. spontaneous voiding). All analyses will be performed using SPSS version 23.

Ethical considerations

In order to comply with ethical issues, all participants will be initially provided with the necessary explanations about the purpose of the research and the method of conducting the study, and their participation in the study will be voluntary. Ethical approval for this study has been obtained from the Ethics Committee of Islamic Azad University, Shahrekord Branch (reference number IR.IAU.FALA.REC.1404.004). In addition, adequate measures will be taken regarding the confidentiality and privacy of the samples' personal information, and the research samples will also be assured. Written informed consent is obtained from all participants to participate in the study.

Discussion

The present study aims to design a protocol for the effectiveness of a telenursing educational intervention based on the HBM on preventive behaviors against UTI in people with SCI in Iran.

Due to mobility limitations and difficulties in accessing healthcare centers, tele-nursing has been proposed as an effective solution for providing health and preventive education. The HBM can also be effective as a theoretical framework in changing attitudes and preventive behaviors.

In this regard, a systematic review by Chang et al. demonstrated that UTI remains the most frequent type of infection among individuals with spinal cord lesions, with the prevalence varying depending on the bladder management method used (3).

Also the study by Garcia-Arguello et al., on the management of UTI in patients with SCI showed that UTI is responsible for major morbidity and mortality in SCI patients and emphasizes prevention and treatment (6), and a study by Ashta et al. demonstrated that symptomatic UTIs are highly prevalent among patients with spinal cord injury, with the highest rates observed in those using continuous indwelling catheters, followed by those using clean intermittent catheterization (14).

Consistent with the present study in studies with titled "The Effect of Education Based on HBM on Promoting UTI Preventive Behaviors," the results showed that a health education program designed based on the HBM is effective in promoting UTI preventive behaviors. In addition, control, monitoring, and educational follow-up are recommended in the implementation of these programs (7, 15).

Several studies also point to the effectiveness of telenursing interventions (16-18).

Considering the problems of patients with SCI and the complications of UTI in these patients, tele-nursing as a suitable solution for providing health education can be effective on preventive behaviors. If this education is designed based on an appropriate theoretical framework, it can be used as a protocol for similar diseases in this at-risk group. It can also be effective in reducing costs due to disease complications and the rate of hospitalization.

Strengths of the study include

Use of new technology: The use of telenursing increases access to health education for people with mobility limitations.

Strong theoretical support: The use of the HBM helps to better understand the barriers and motivations of individuals to perform preventive behaviors.

Reduced healthcare costs: Preventing UTIs leads to reduced hospital visits and associated costs.

Focus on a specific population: This study addresses the specific needs of people with SCI, who are often overlooked in general education programs.

Potential for scaling up: If effective, this protocol could be generalized to other chronic diseases and similar populations.

Conclusion

This study presents a novel approach to promote preventive behaviors against UTI in people with SCI by designing an integrated educational protocol based on telenursing and the HBM. Considering the mobility limitations and special needs of this group, the use of distance education interventions not only improves access to healthcare, but also provides the basis for sustainable change in preventive behaviors by emphasizing the cognitive and motivational factors of the HBM model.

The findings of this study can lead to a significant reduction in complications caused by UTI and improve the quality of life of these patients. If this protocol is effective, it can be expanded to other chronic diseases and populations with mobility limitations. Also, the results of this study can be a basis for health policies to integrate telenursing services into care systems for specific patients. To achieve more comprehensive results, further studies with larger samples and longer follow-up periods are recommended. This research is

[Downloaded from ehj.ssu.ac.ir on 2026-09-08]

[DOI: 10.18502/ehj.v12i1.21909]

an important step towards realizing equity-oriented healthcare based on new technologies.

Study limitations

Technological issues: Not all patients have access to high-speed internet or communication tools, which may limit participation.

Self-report bias: Questionnaire-based data may be affected by individuals' tendency to respond favorably.

Need for long-term follow-up: Assessing the durability of behavior change requires long-term follow-up studies.

Clinical trial number

This randomized controlled trial is registered in the Iranian Clinical Trials Registry with IRCT registration number (IRCT20180722040555N2|| https://irct.behdasht.gov.ir/user/trial/83717/view) on 2025-05-29.

Consent to participate

In order to comply with ethical issues, all participants will be initially provided with the necessary explanations about the purpose of the research and the method of conducting the study, and their participation in the study will be voluntary.

Conflict of interests

The authors declare that they have no competing interests.

Acknowledgements

This paper is extracted from a research project. The authors would like to thank Shahrekord Branch, Islamic Azad University, Shahrekord, for supporting this research.

Funding

This research protocol is funded by the Shahrekord Branch, Islamic Azad University, Shahrekord, Iran.

Authors' contributions

All authors were involved in study conception, design, drafting of the manuscript, AM, FK and ZK were involved in write and revise the manuscript. All authors have read and approved the final version of the manuscript.

References

1. National Spinal Cord Injury Statistical Center. Facts and Figures at a Glance. Birmingham, AL: University of Alabama at Birmingham; 2021.
2. Lavelle JP. Intermittent catheters: to reuse or not. Spinal Cord Series and Cases. 2020; 6: 1-2.
3. Chang SC, Zeng S, Tsai SJ. Outcome of different approaches to reduce urinary tract infection in patients with spinal cord lesions: a systematic review. American Journal of Physical Medicine & Rehabilitation. 2020; 99(11): 1056-66.
4. Milligan J, Goetz LL, Kennelly MJ. A primary care provider's guide to management of neurogenic lower urinary tract dysfunction and urinary tract infection after spinal cord injury. Topics in Spinal Cord Injury Rehabilitation. 2020; 26(2): 108-15.
5. D'Hondt F, Everaert K. Urinary tract infections in patients with spinal cord injury. Current Infectious Disease Reports. 2011; 13(6): 544-51.
6. Garcia-Arguello LY, Gater DR Jr. Urinary tract infection in the patient with spinal cord injury. Physical Medicine and Rehabilitation Clinics of North America. 2021; 32(2): 351-67.
7. Taghdisi MH, Nejadsadeghi E. The effect of health education based on health belief model on behavioral promotion of urinary infection prevention in pregnant women. Journal of Research & Health. 2012; 2(1): 44-54.
8. Mohammad ACS, Mirghafourvand M, Rahmani A, Seidi S, Safari E, Mahini M, et al. The effect of software on knowledge and performance of teenage girls toward puberty hygiene: a randomized controlled trial. Iranian Journal of Medical Education. 2014; 14(2): 110-21.
9. Nageswaran L, Giurleo C, Seliman M, Askes HK, Abu-Jurji Z, Craven BC, et al. Parkwood's VIP4SCI platform: A virtual e-health self-management solution for persons with spinal cord injury across the care continuum. Digital Health. 2024; 10: 1-13.
10. Lee S, Kim J, Kim J. Substantiating clinical effectiveness and potential barriers to the widespread implementation of spinal cord injury telerehabilitation: a systematic review and qualitative synthesis of randomized trials in the recent past decade. Telemedicine Reports. 2021; 2(1): 64-77.
11. Tabari L, Kamada I, Rabeh SAN, Nogueira PC. Nursing teleconsultation for people with spinal cord injury: nurses' opinion on the main guidelines. ESTIMA, Brazilian Journal of Enterostomal Therapy. 2023; 21: 1475.
12. Behzad Y, Bastani F, Haghani H. Effect of empowerment program with the telephone follow-up (tele-nursing) on self-efficacy in self-care behaviors in hypertensive older adults. Nursing and Midwifery Journal. 2016; 13(11): 1004-15.
13. Seyed-Rajabizadeh S, Shojaizadeh D. The effect of educational intervention based on health belief model on the promotion of preventive behaviors of urinary tract infections in pregnant women referred to comprehensive health centers in Dezful, Iran, 2019-2020. Journal of Health System Research. 2021; 17(2): 104-10.

[Downloaded from ehj.ssu.ac.ir on 2026-09-08]

[DOI: 10.18502/ehj.v12i1.21909]

14. Ashta K, Mohan C, Nair BT, Arora S. Study of prevalence, microbiologic agents, and bladder management methods of urinary tract infections among spinal cord injury patients. Archives of Medicine and Health Sciences. 2023; 11(1): 64-69.
15. Javaheri Tehrani F, Nikpour S, Haji Kazemi EA, Sanaie N, Panahi SAS. The effect of education based on health belief model on health beliefs of women with urinary tract infection. International Journal of Community Based Nursing and Midwifery. 2014; 2(1): 2-11.
16. Gibson NA, Arends R, Hendrickx L. Tele-U to tele-ICU: telehealth nursing education. Critical Care Nurse. 2021; 41(5): 34-9.
17. Madadkar Dehkordi S, Okhovat F, Karimiankakolaki Z. Designing a clinical trial protocol about the impact of family-based multimedia education based on telephone tracking (tele nursing) to improve the quality of life and self-efficacy in patients with myocardial infarction. International Journal of Surgery Protocols. 2021; 25(1): 92-7.
18. Rizk S, Siam B. Effect of tele-nursing education program on nurses' compliance with standard precautions during COVID-19 pandemic. Assiut Scientific Nursing Journal. 2021; 9(25): 10-9.

[Downloaded from ehj.ssu.ac.ir on 2026-09-08]

[DOI: 10.18502/ehj.v12i1.21909]