



Original research article

Psychometric properties of the Slovak version of the MISSCARE Survey-Patient

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Abstract

Background: Understanding patient-perceived missed nursing care is essential for improving patient-centred care, safety, and quality of nursing services in acute care settings. Although missed nursing care has been widely examined from nurses' perspectives, instruments capturing patients' experiences require further cultural adaptation and validation.

Aim: This study aimed to adapt the Slovak version of the MISSCARE Survey-Patient and to evaluate its psychometric properties in adult medical and surgical inpatient settings.

Design: A cross-sectional, correlational study.

Methods: A convenience sample of 319 adult inpatients from medical and surgical wards of three acute care hospitals participated in the study. Psychometric evaluation included item analysis, internal consistency assessment, confirmatory factor analysis, and testing of convergent and known-groups validity.

Results: Confirmatory factor analysis supported a three-factor structure comprising communication, basic care, and timeliness domains. Internal consistency was acceptable for the communication and basic care subscales. In contrast, the timeliness subscale demonstrated weaker psychometric performance, characterised by low item-total correlations and a high proportion of "not applicable" responses. Missed nursing care was most frequently reported in the communication domain. Significant associations were observed between patient-perceived missed nursing care, nursing care quality, and selected adverse events.

Conclusion: The Slovak version of the MISSCARE Survey-Patient demonstrates acceptable psychometric properties for assessing patient-perceived missed nursing care in acute medical and surgical settings, particularly in the communication and basic care domains. However, the applicability of the timeliness subscale appears limited, suggesting cautious interpretation and further refinement or validation of this domain before routine clinical use.

Keywords: Missed nursing care; Patient; Reliability; Validity

Introduction

Missed nursing care (MNC) represents a significant threat to patient safety and the quality of nursing care in acute care hospitals (Chaboyer et al., 2021; Papastavrou et al., 2014; Zeleníková et al., 2023). It refers to any required nursing intervention that is delayed, partially completed, or entirely omitted (Kalisch et al., 2009). Although the prevalence, patterns, and causes of MNC have been extensively studied from nurses' perspectives, few investigations have incorporated the patient perspective or examined how patient care priorities influence experiences of MNC (Cohen et al., 2025; Gurková et al., 2024; Gustafsson et al., 2020; Orique et al., 2017).

As recipients of care, patients can identify omissions in both basic care and emotional, psychological, or communication support (Chiappinotto et al., 2023; Cohen et al., 2025;

Gustafsson et al., 2020). Recent reviews have synthesised evidence on patient-perceived MNC, highlighting basic nursing care, communication, and timeliness as the most frequently missed interventions (Bagnasco et al., 2020; Gustafsson et al., 2020). Understanding patient perspectives is essential to strengthening patient-centered care and empowerment (Bagnasco et al., 2020). Notably, discrepancies exist between nurses' and patients' perceptions of MNC, underscoring the need for enhanced communication and collaboration (Cohen et al., 2025).

In Slovakia, numerous studies have examined MNC from the perspectives of nurses, nurse managers, and nursing students, primarily in acute care settings (Gurková et al., 2020; Kalánková et al., 2020; Kohanová et al., 2024a, b). Several nurse self-report instruments have been validated in Slovak, including the Perceived Implicit Rationing of Nursing Care (Gurková et al., 2020; Kalánková et al., 2020), the MISSCARE

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Survey (Zeleníková et al., 2019), the Infection Control Missed Care Survey (Gurková et al., 2022), and the Unfinished Nursing Care Survey for Students (Kalánková et al., 2024). Evidence from these studies identifies the prevalence, patterns, and contributing factors of MNC, highlighting the importance of supportive work environments and adequate staffing (Cohen et al., 2025).

Although research on patient-reported MNC is emerging, instruments specifically designed to capture patient perspectives are limited. The MISSCARE Survey-Patient, adapted from the nurse self-report MISSCARE Survey, measures patient-perceived missed nursing care (Kalisch et al., 2012, 2014) and has been applied internationally (Cho et al., 2017; Moreno Monsiváis et al., 2015; Sönmez et al., 2020). A validated Slovak version of this instrument is necessary to accurately assess patient-perceived MNC in Slovak acute care hospitals.

Aim

This study aimed to adapt the Slovak version of the MISSCARE Survey-Patient to measure patient-perceived MNC and evaluate its psychometric properties. In line with established psychometric validation practice, we expected (1) a three-factor structure corresponding to communication, basic care, and timeliness domains, (2) acceptable internal consistency of the core subscales, and (3) theoretically meaningful associations between patient-perceived missed nursing care, nursing care quality, and selected adverse events.

Materials and methods

Study design

A cross-sectional study design was employed. The study comprised two phases: (1) linguistic validation and cultural adaptation of the instrument, and (2) psychometric evaluation using Classical Test Theory (Cappelleri et al., 2014). Analyses included descriptive statistics, inter-item correlations, Cronbach's alpha, confirmatory factor analysis (CFA), and construct validity assessments. The STROBE checklist guided reporting.

Translation and cultural adaptation

The translation of the Slovak language version of the MISSCARE Survey-Patient consisted of standard forward and backward translation phases to develop a conceptually equivalent language version (Wild et al., 2005). In the first step, the original version was translated into the Slovak language by two independent forward translators, who produced inter-translationally aligned versions (forward translation). The Slovak versions of the survey were reviewed by five experts who applied face validity to create a final Slovak version and assess the relevance and usability of the translated version (reconciliation). The expert panel consisted of five members with expertise in nursing research, clinical nursing practice, and instrument validation. The panel evaluated the semantic, idiomatic, experiential, and conceptual equivalence of all items. No substantive changes to the core content of the MISSCARE Survey-Patient items were required; modifications were limited to minor linguistic adjustments to improve clarity and comprehensibility for Slovak patients. Subsequently, the final version was given to an expert interpreter, who translated the questionnaire and rewrote it into English (back-translation). However, due to country-specific cultural and social factors, we were naturally forced to deviate from the original questionnaire in some cases, especially regarding demographic data, to make the instrument applicable in Slovakia.

Sample and setting

Participants were recruited using nonprobability convenience sampling from three acute care hospitals, including adult medical ($n = 3$) and surgical wards ($n = 8$). Inclusion criteria: aged ≥ 18 , fluent in Slovak, alert, oriented, capable of communication, and consented to participate. Patients with severe cognitive deficits or mental illness were excluded. Data collection occurred from March 2022 to March 2024. Of 582 distributed questionnaires, 319 were completed (response rate 54.81%). Based on a three-factor structure with 13 items, a minimum sample of 130 respondents was required (Cappelleri et al., 2014).

Data collection

Survey packets included a cover letter, demographic and health-related items, and the MISSCARE Survey-Patient (Kalisch et al., 2014). The psychometric properties of the MISSCARE Survey-Patient were tested by Kalisch et al. in 2013 (Kalisch et al., 2014). In total, the instrument consisted of 21 items. Three instrument subscales (communication, timeliness, and basic care) comprise 13 items and focus on the frequency and duration of nursing care interventions (Dabney and Kalisch, 2015). The communication subscale consists of five items that focus on how often the patient communicated with the nurse, how informed he/she was about treatments, diagnostic tests, procedures, and care, and how well he/she was listened to and informed about the nurse assigned to him/her. Items were rated on a Likert scale from 1 (never) to 5 (always). These items were then recoded so that higher scores indicated higher MNC rates. The basic care subscale consisted of four items focusing on basic care needs – assistance with oral hygiene, general hygiene, transfer from bed to chair, and ambulation. The items were rated on a Likert scale ranging from 1 (never) to 5 (always). These items were reversed so that higher scores indicated higher levels of MNC. For items focusing on assistance with transferring from bed to chair and walking, patients could also indicate a response of 6 – unable to move or walk. This item was recorded as 0 – patients could not move or walk, i.e., this nursing intervention did not need to be implemented; it was not absent. The timeliness subscale consists of four items assessing the timeliness of nursing care after the patient requested it, on a scale from 1 (less than five minutes) to 5 (more than 30 minutes). This subscale includes the time elapsed before nurses respond to the need to urinate, the beeping monitor or machine, and the call signal or beep. Patients could also indicate a response with code 6 – device did not beep; the patient did not press the alarm or request assistance, i.e., care was not needed or missed. We recoded this item to 0. In this case, recoding responses 1–5 was unnecessary. Thus, a higher score indicates a higher MNC rate. The instrument also included an item to assess the quality of nursing care on a Likert scale from 1 (poor) to 5 (excellent). At the end of the questionnaire, experiences of adverse events related to hospitalisation (falls, pressure ulcers, medication errors, etc.) were assessed.

Although the original MISSCARE Survey-Patient contains 21 items, only 13 items representing the three core subscales were included in the psychometric analyses, in accordance with the original factor structure proposed by Kalisch et al. (2014). Items not included in the CFA differ in measurement level and conceptual function. Nominal and dichotomous items assessing adverse events or care outcomes do not meet the statistical assumptions of CFA and are not intended to act as indicators of the latent construct. Consistent with the original validation framework, these items were therefore excluded from factor-analytic procedures.

Ethical considerations

Ethical approval was obtained from the Institutional Ethics Committees of the Faculty Hospital of J. A. Reiman in Prešov and the University Hospital in Martin. All participants provided informed consent.

Data analysis

IBM SPSS Statistics for Windows (Version 25.0) Armonk, New York, and Amos (Version 23.0) [Computer Program], Chicago, IL: IBM SPSS were used. Descriptive statistics summarised demographic characteristics and item responses. CFA models were conducted to evaluate the theoretical assumption that the *MISSCARE Survey-Patient* has a 3-factor structure (Dabney and Kalisch, 2015).

CFA tested the three-factor structure, with fit indices including χ^2 , RMSEA, GFI, CFI, and TLI. Model fit was evaluated using commonly accepted thresholds: Comparative Fit Index (CFI) and Tucker–Lewis Index (TLI) values ≥ 0.90 were considered acceptable, with values ≥ 0.95 indicating good fit; Root Mean Square Error of Approximation (RMSEA) values ≤ 0.08 indicated acceptable fit, and values ≤ 0.06 indicated good fit (Chen et al., 2008).

Convergent validity was evaluated using Pearson correlations with the nursing care quality item. Known-groups validity was assessed using Mann–Whitney *U* tests to compare MNC scores between patients who experienced adverse events and those who did not. We hypothesised that higher rates of MNC would be associated with poorer nursing care quality and a higher incidence of adverse events.

Reliability was examined using Cronbach’s alpha, with significance set at $p \leq 0.05$.

Results

Sample characteristics

The sample ($n = 319$) had a mean age of 54.85 ± 17.84 years (range, 19–90), with 50.2% of the participants being male. Most had secondary education (67.1%), followed by university (22.6%) and primary education (10.3%). A majority lived with a partner (56.7%). Patients were admitted to medical wards (42.6%) and surgical wards (57.4%), with a mean hospital stay of 6.94 ± 8.09 days. Prior hospitalisation was reported by 71.4% of patients. Mean nursing care quality was 2.37 ± 0.95 .

Item analysis and reliability

The analysis of items from the Slovak *MISSCARE Survey-Patient* instrument is displayed in Table 1. Within the timeline subscale items, most patients (60.2%) did not require nursing care with bathroom assistance. Items on the communication and basic care subscales demonstrated a satisfactory item-total correlation of ≥ 0.3 . However, item-total correlations of the timelines subscale were < 0.3 . The internal consistency of the instrument as a whole was satisfactory, as indicated by the results of Cronbach’s alpha coefficient of 0.766 ($N = 319$). The overall reliability of the instrument would increase if we removed items 13 and 19, which many patients also identified as not fitting the concerns of MNC. The high proportion of “not applicable” responses on the timeliness subscale suggests that several items may be less relevant to patients hospitalised in standard medical-surgical wards.

Table 1. Item analysis of the MISSCARE Survey-Patient (N = 319)

Item	Median/Modus	Inter-quartile range	Percentages of responses pre each Likert point						Corrected item-total correlation	Cronbach’s alpha if item deleted
			0	1	2	3	4	5		
1. Information about his/her assigned nurse	2/5	5 – 2	–	19.7	14.1	14.4	12.2	39.5	0.412	0.751
2. Information about treatment	2/1	4 – 1	–	27.0	23.8	24.1	17.9	7.2	0.461	0.744
3. Information about examination and interventions	2/1	3 – 1	–	45.1	21.6	12.2	11.6	9.4	0.427	0.747
4. Nurses listen to patient’s concerns	1/1	2 – 1	–	63.6	17.6	13.5	3.1	2.2	0.559	0.738
5. Taking into account patient’s opinion	2/2	3 – 1	–	27.9	31.7	24.8	6.6	9.1	0.514	0.738
6. Assistance with mouth hygiene	2/1	3 – 1	–	43.6	16.3	17.9	13.8	8.5	0.479	0.741
7. Assistance with hygiene, showering, bathing	2/1	3 – 1	–	47.3	19.7	18.8	8.5	5.6	0.562	0.733
9. Assistance with getting out of bed into a chair	2/1	3 – 1	11.0	34.5	17.2	16.9	9.1	11.3	0.447	0.745
10. Assistance with walking	2/1	4 – 1	11.9	27.3	16.3	17.2	12.9	14.4	0.467	0.743
13. Responding to the beeping monitor or machine	1/1	1 – 0	39.5	46.7	11.9	1.3	0.0	0.6	0.197	0.767
14. Response to call lights	1/1	1 – 1	15.4	73.0	9.1	2.2	0.3	0.0	0.199	0.766
15. Response to alarms	1/1	1 – 1	15.4	64.9	17.6	1.9	0.0	0.3	0.268	0.762
19. Response to bathroom assistance	0/0	1 – 0	60.2	22.6	14.4	1.3	0.6	0.9	0.014	0.781

Note: Interquartile range = Q3 – Q1. Percentages of responses pre each Likert point: 0 – not applicable, 1 – always, 2 – usually, 3 – sometimes, 4 – rarely, 5 – never

Confirmatory factor analysis

The items saturated the factors as expected, but the fit indices ($\chi^2 = 249.833$, $df = 62$, $p < 0.001$; GFI = 0.889, CFI = 0.840; TLI = 0.798; RMSEA = 0.098) did not meet the desired criteria. Given this, we proceeded to modify the model. The adjusted model identified covariance between the communication subscale and items 6 and 7, as well as between items 6 and 7

(Diagram 1). After considering the modifying indices (Diagram 2), the values of $\chi^2 = 102.667$, $df = 59$, $p = 0.000$; GFI = 0.955, CFI = 0.963; TLI = 0.951; RMSEA = 0.048 supported the good fit of the adjusted model. Although the *post hoc* model modifications improved model fit, these adjustments should be interpreted cautiously due to the potential risk of overfitting.

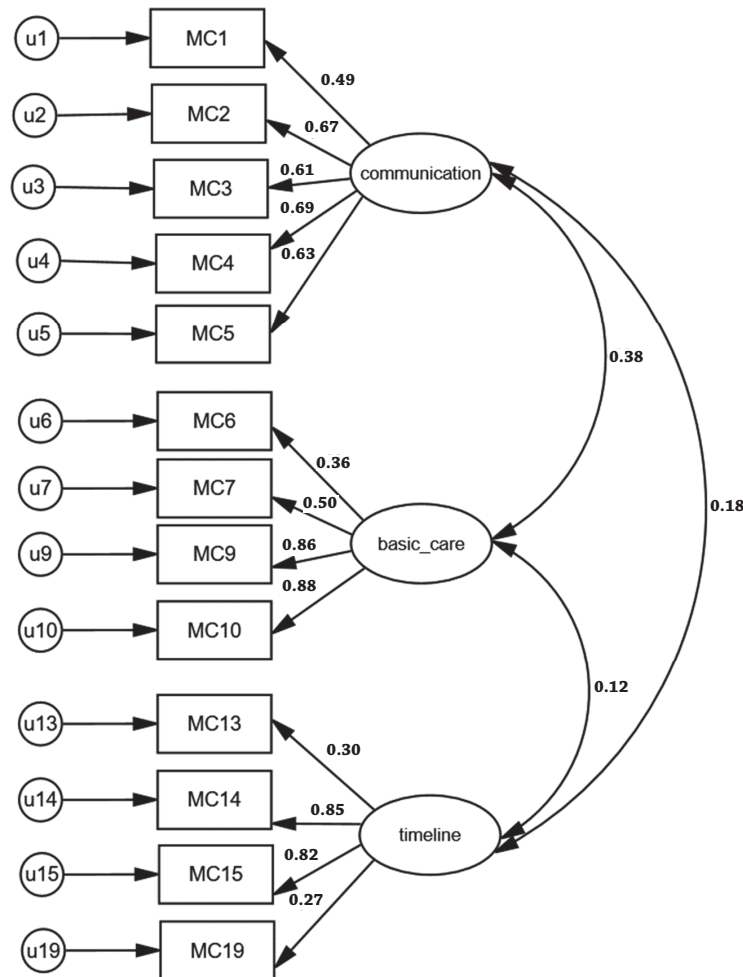


Diagram 1. Confirmatory factor analysis model of MISSCARE Survey-Patient

The internal consistency ($N = 319$) of the communication and basic care domains was acceptable (Cronbach's alpha 0.736 and 0.729, respectively); the reliability of the timeliness domain was borderline (Cronbach's alpha 0.655). Within the primary care subscale, if we included patients who rated missing care and excluded those who rated items 9 and 10 as irrelevant or not applicable ($N = 275$), the scale's reliability would rise to 0.792. If we included patients who rated missed care in the timeliness subscale and excluded those who rated items 13, 14, 15, and 19 as not fit to MNC ($N = 87$), the scale's reliability would increase to a Cronbach's alpha value of 0.727.

Descriptive analysis of missed care subscales and convergent and known-group validity

The mean scores for the basic care and timeliness subscales are based only on patients who rated MNC on a scale of 1 to 5, i.e.,

those who did not report an item that was not applicable. The mean score of the communication subscale ($N = 319$) reached a value of 2.42 ± 0.90 , the mean score of the basic care subscale ($N = 275$) was 2.36 ± 1.08 , and the timeliness subscale ($N = 87$) score was 1.30 ± 0.38 .

Significant positive correlations ($r > 0.46$, $p \leq 0.001$) between all subscales were identified. However, between basic care and timeliness scales, the correlation was lower ($r = 0.271$) but still significant ($p \leq 0.05$).

A statistically significant relationship between age and the missing care subscales was not found. Additionally, statistically significant differences by gender and education were not observed in the sub-scales of missing care. By marital status, significant differences were observed only in the communication subscale ($p = 0.015$), with higher mean scores in patients living without a partner (MNC: 2.56 ± 0.86) than in those living with a partner (MNC: 2.31 ± 0.92).

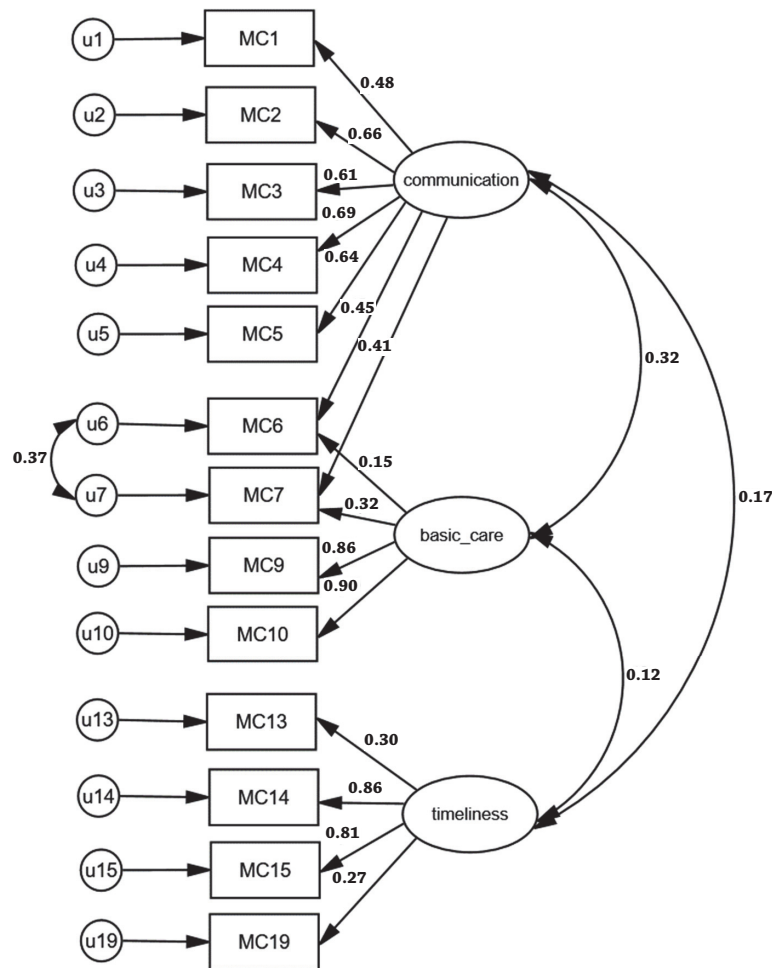


Diagram 2. Adjusted confirmatory factor analysis model of MISSCARE Survey-Patient (reliability analysis)

No differences in missed care scores were identified by department type (internal versus surgical). Correlations between hospital stay length and missed care were also not confirmed. However, patients with prior hospitalisation reported lower rates of missed communication ($p = 0.05$), basic care ($p = 0.020$), and timeliness ($p = 0.011$).

We hypothesised that higher rates of MNC would be associated with poorer nursing care quality and a higher incidence of adverse events. Results of correlation analysis confirmed

significant ($p \leq 0.05$) negative relationships between nursing care quality and rates of missed nursing care in communication ($r = -0.118$) and basic care ($r = -0.120$) from the patient's perspective.

The distribution of adverse events and missed nursing care scores, based on patient-reported adverse events, is shown in Table 2. Significantly ($p \leq 0.05$), higher rates of missed nursing care were observed in cases of late infusion stopping and borderline extravasation.

Table 2. Missed nursing care scores based on the adverse event reports

Adverse events and their distribution	Communication		Basic care		Timeline		
	N	M ± SD	N ^a	M ± SD	N ^a	M ± SD	
Falls	Yes	3	2.27 ± 1.68	3	2.25 ± 1.73	0	N/A
	No	316	2.42 ± 0.90	272	2.36 ± 1.07	87	N/A
	<i>p</i> ^b		0.543		0.775		–
Skin injury/pressure ulcer	Yes	8	2.55 ± 0.80	6	2.83 ± 1.47	1	1.00
	No	311	2.42 ± 0.91	269	2.35 ± 1.07	86	1.31 ± 0.39
	<i>p</i> ^b		0.632		0.403		0.329
Medication error	Yes	0	N/A	0	N/A	0	N/A
	No	319	N/A	275	N/A	87	N/A
	<i>p</i> ^b		–		–		–
New infection	Yes	8	2.58 ± 1.13	7	2.68 ± 1.34	3	1.50 ± 0.50
	No	308	2.42 ± 0.90	268	2.36 ± 1.08	84	1.29 ± 0.38
	<i>p</i> ^b		0.715		0.470		0.379
Failure to stop an infusion after it has leaked (air in the tubing)	Yes	31	2.90 ± 0.70	26	2.86 ± 0.89	11	1.55 ± 0.51
	No	280	2.37 ± 0.92	242	2.31 ± 1.10	74	1.27 ± 0.36
	<i>p</i> ^b		0.001		0.006		0.070
Extravasation	Yes	14	2.87 ± 0.88	13	2.67 ± 1.07	5	1.70 ± 0.57
	No	304	2.40 ± 0.90	261	2.35 ± 1.08	82	1.28 ± 0.36
	<i>p</i> ^b		0.064		0.231		0.051

Note: ^a Only patients who did not mark the “not applicable” option. N/A is not applicable; there are fewer than two groups for the dependent variable;

^b The Mann–Whitney *U* test verified the significance level

Discussion

The MISSCARE Survey-Patient provides valuable insight into patients' perceptions of missed nursing care. Recognising and addressing patient-perceived omissions can enhance patient-centered care, empower patients, and ultimately improve the quality of care, increase patient satisfaction with nursing services, and foster trust in healthcare professionals.

This study examined the psychometric properties of the MISSCARE Survey-Patient in Slovak and confirmed its validity in terms of language and content. A standard forward-back translation process, panel expert review, and psychometric analysis were applied, and linguistic validity was confirmed in a manner appropriate for Slovak syntax, ensuring comprehensibility to patients while preserving their meaning.

Testing of the psychometric properties of the Slovak version (factorial analysis and reliability) was conducted using procedures similar to those used for the original instrument and the recently published validation study (Sönmez et al., 2020). Most studies examining MNC have been performed in inpatient adult medical and surgical settings (Bagnasco et al., 2020). Therefore, this study examined the perceptions of MNC among adult medical and surgical inpatients.

In validation studies, the factorial structure of the instrument can be confirmed using CFA, as the structure of the measured variable is already known. The CFA results confirmed the scale's original three-factor structure with 13 items. In our study, the instrument's adapted 3-factor structure achieved optimal fit indices in CFA. Some covariance was found between the communication subscale and items 6 and 7. This is

explained by the fact that the wording of both items contains two questions focusing on both communication and the assistance needed for basic nursing care (“How often did the nurses reassure... or help you with...?”). The Slovak version of the MISSCARE Survey-Patient demonstrated good psychometric properties in terms of reliability and construct validity, supporting conclusions from several validation studies (Dabney and Kalisch, 2015; Sönmez et al., 2020).

The Cronbach's alpha coefficient for the Slovak version was 0.766 for the overall instrument and ranged from 0.655 to 0.735 for the subscales. Values were lower than those reported for the original version (Dabney and Kalisch, 2015) or other validation studies (Sönmez et al., 2020). However, if we included patients who experienced MNC and excluded those who rated items as irrelevant and not applicable (items 9 and 10 in the basic care subscale, items 13–15, and 19 in the timeliness subscale), the scale's reliability would improve. If items 13–15 and 19 were removed from the instrument, there would be only a slight increase in Cronbach's alpha coefficient and, thus, an improvement in the instrument's reliability. Item-total analysis indicated that the communication and primary care subscale items achieved satisfactory item-total correlations. However, the timeliness subscale items (13, 14, 15) showed item-total correlations of less than 0.3. Even item 19 only had a value of 0.014. This can be explained by the fact that most patients admitted to standard medical-surgical departments marked this item as not applicable.

The Slovak version of the MISSCARE Survey-Patient demonstrated strong relevance to the medical-surgical acute care setting, as evidenced by the pattern of “not applicable” response frequencies across the communication and basic care

subscales. While the overall factor structure was supported, the timeliness subscale's weaker psychometric performance suggests that the validity of this domain is limited in the Slovak acute care context. Among the patients in the study, the most reported items were not related to MNC in the timeliness subscale. The fewest items reported as "not applicable" were in the communication subscale. Findings from this study raise several questions about the relevance of the timeliness subscale in general medical-surgical nursing units compared with intensive care units.

Compared to the scores reported in studies conducted in the USA (Dabney and Kalisch, 2015; Kalisch et al., 2014), Korea (Cho et al., 2017), or Turkey (Sönmez et al., 2020), the mean score was higher, particularly on the communication subscale. This study's most frequently missed interventions have been found in the communication subscale, followed by missed basic care and timeliness. However, the most frequently missed interventions in the US (Dabney and Kalisch, 2015; Kalisch et al., 2014), Turkish (Sönmez et al., 2020), and Korean studies (Cho et al., 2017) have been found in basic care, followed by missed communication and timeliness. Similarly, in a Mexican study (Moreno Monsiváis et al., 2015), most patients reported MNC in basic care (mouth care, assistance with ambulation, hand washing, changing position) and emotional support. Some intercultural differences have been found in the patient's perspective in the MNC. For example, it was interesting that patients in Korea (Cho et al., 2017) and Turkey (Sönmez et al., 2020) reported lower MNC levels than in this study and US studies (Dabney and Kalisch, 2015; Kalisch et al., 2014). One explanation could be that in the Asian countries mentioned above, the patient's companion (the most common family member) assists with basic care and performs some of the nurses' duties (Sönmez et al., 2020).

The highest score in the communication subscale may be associated with omitting activities related to emotional and psychological needs. The communication subscale score contributed significantly to patients' trust in nurses and satisfaction with care (Karadaş et al., 2024). From nurses' perspectives, activities related to emotional and psychological needs have been the most frequently missed in previous Slovak studies focusing on MNC (Gurková et al., 2020; Kalánková et al., 2020; Zeleníková et al., 2019). In addition, previous studies conducted in Slovakia (Soósová and Uhrínová, 2019; Soósová et al., 2022) focused on the assessment of patient satisfaction with nursing care showed the highest patient satisfaction with nurses' knowledge, expertise, and competence, and the lowest satisfaction with the meeting of emotional, social, and spiritual needs. Patients' satisfaction with communication significantly predicted their overall satisfaction with nursing care (communication satisfaction explained up to 80.3% of the variability in overall satisfaction). In their recently published review focusing on the perceptions of unmet nursing care needs among surgical and medical inpatients, Bagnasco et al. (2020) showed that communication was a crucial aspect of unmet needs. Patients often felt that communication between themselves and nurses could be better concerning various aspects of nursing care (Bagnasco et al., 2020).

However, in line with previous studies, the most frequently missed care from the patient's perspective is the failure to provide information about the assigned caregiver, followed by basic care in assisting with physical activity. The least missed intervention was being listened to carefully by nurses if the patient had any questions or concerns. From the patients' perspective, nurses' responses were fastest for call lights (73% responded within five minutes) and for alarms (64.9% respond-

ed within five minutes). Only a low percentage of patients experienced any adverse events. In line with previous studies (Cho et al., 2017; Dabney and Kalisch, 2015; Sönmez et al., 2020), intravenous infusion (IV) running dry and IV leaking into the skin are the most frequently reported adverse events from the patients' perspective (12% and 15%, respectively). In addition, Cho et al. (2017) found that patients who experienced at least one adverse event had a significantly higher mean score for missed communication and basic care. A higher MNC score was observed in cases of late infusion stopping and borderline extravasation, thus confirming the construct validity of the Slovak instrument using the known-groups method. Negative correlations between the missing care subscales and nursing care quality confirmed the instrument's convergent validity. In line with previous studies (Cho et al., 2017; Dabney and Kalisch, 2015; Sönmez et al., 2020), negative associations were found between rating the nursing care quality and rates of missed communication and basic care. Among patient-related factors, compared with the US study (Dabney and Kalisch, 2015), age and education level were not as significant in reporting MNC. The type of unit (internal versus surgical) was not found to be a contributing factor to patient-perceived MNC.

The study had several limitations. The first limitation is that the study was conducted in only three hospitals, used convenience sampling, and included only inpatient wards, which may have limited its generalisability to other healthcare settings. The inclusion criteria may have excluded patients who could not communicate effectively due to their medical condition, potentially resulting in a sample that does not fully represent the diverse experiences of patients. Another limitation is the low response rate (54.81%). Selection bias related to convenience sampling may have affected the results, given the moderate response rate. These factors should be considered when generalising the findings. Missing data were minimal and handled using complete-case analysis. Given the self-reported nature of the data, the possibility of social desirability bias cannot be excluded.

Conclusion

The Slovak version of the MISSCARE Survey-Patient demonstrates acceptable psychometric properties for assessing patient-perceived missed nursing care in acute medical and surgical settings, particularly in the communication and basic care domains. The three-factor structure is stable and highly relevant to communication and basic care. Patient-perceived MNC correlates with adverse events and nursing care quality, emphasising the importance of patient-centered approaches. Application of this instrument can inform quality improvement initiatives, enhance patient satisfaction, and support empowerment in nursing care delivery. Given the limitations identified in the timeliness subscale, cautious use of the whole instrument in clinical practice is recommended until further validation or refinement is undertaken.

Author contributions

EG, MSS, KZ: Made substantial contributions to the conception and design of the study, or to the acquisition, analysis, and interpretation of data; were involved in drafting the manuscript or revising it critically for important intellectual content; and gave final approval of the version to be published. Each author participated sufficiently in the work to take public responsibility for appropriate portions of the content; agreed

to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Ethical considerations

The institutional ethics committees (The Ethical Committee of the Faculty Hospital of J. A. Reiman in Prešov and the Ethical Committee of the University Hospital in Martin) approved the research protocol.

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Conflict of interest

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