
**A COMPARATIVE STUDY TO ASSESS KNOWLEDGE AND
PRACTICE REGARDING MNEMONICS AMONG FIRST-YEAR AND
FINAL-YEAR B.SC. NURSING STUDENTS WITH A VIEW TO
DEVELOPING AN INFORMATION BOOKLET**

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Abstract

Background: Nursing students are required to acquire, retain, and retrieve a large volume of factual and procedural information. Mnemonics are memory-support strategies that organize information into meaningful cues, such as acronyms, phrases, associations, imagery, or other structured prompts. They may be particularly useful in nursing education, where students must recall sequences, classifications, terminology, assessment components, and clinical processes. However, familiarity with mnemonic strategies does not necessarily indicate adequate knowledge of how or when to use them. The present study compared knowledge and practice regarding mnemonics among first-year and final-year B.Sc. Nursing students and used the identified learning needs to guide development of an information booklet.

Methods: A quantitative comparative research approach was used. The study included 80 B.Sc. Nursing students, comprising 40 first-year and 40 final-year students from selected nursing colleges in Kolar. Participants were selected using non-probability purposive sampling. Data were collected using a Structured Knowledge Questionnaire (SKQ) and a Structured Practice Questionnaire (SPQ). The study also collected selected demographic characteristics, including age, gender, religion, type of family, area of residence, parental education and occupation, family income, previous knowledge of mnemonics, and source of information. Descriptive statistics were used to summarize the findings. Group comparisons were examined using t-test statistics, relationships between knowledge and practice were assessed using Pearson's correlation, and associations with selected demographic variables were examined

using

chi-square

analysis.

Results: Most first-year students (35; 87.5%) had poor knowledge regarding mnemonics, while 5 (12.5%) had average knowledge. Among final-year students, 31 (77.5%) had poor knowledge and 9 (22.5%) had average knowledge. The mean knowledge score was 12.25 (SD 3.74) in first-year students and 13.68 (SD 3.067) in final-year students, with a mean difference of 1.42. Based on the reported *t* value of 1.863, the difference does not reach conventional statistical significance at the 0.05 level. Practice was more favorable: 31 (77.5%) first-year students and 33 (82.5%) final-year students demonstrated favorable practice. Mean practice scores were 32.13 (SD 6.313) and 37.25 (SD 5.465), respectively, with a mean difference of 5.10 and a reported *t* value of 3.863. Pearson's correlation showed no significant relationship between overall knowledge and practice ($r=0.042$, $p=0.711$). Correlations were also non-significant in first-year students ($r=0.026$, $p=0.874$) and final-year students ($r=0.145$, $p=0.371$).

Conclusion: Both groups demonstrated a need for strengthening knowledge regarding mnemonic strategies, although final-year students had higher mean knowledge and practice scores. The findings support development of a structured information booklet and incorporation of practical, context-specific mnemonic teaching into nursing education. Because the present study was comparative rather than an intervention study, the information booklet should be considered an educational resource rather than an intervention proven effective by this study.

Keywords: Mnemonics; Memory; Knowledge; Practice; B.Sc. Nursing Students; Nursing Education; Information Booklet.

INTRODUCTION

Learning in nursing requires students to acquire large amounts of information and to retrieve it accurately during examinations, demonstrations, clinical practice, and patient care. Memory involves encoding, storage, and retrieval of information, and successful learning depends not only on exposure to information but also on the learner's ability to retrieve it when required. Mnemonic devices are deliberate memory-support techniques that provide cues for organizing and recalling information. Common forms include acronyms, acrostics, rhymes, imagery, method of loci, keyword associations, and structured phrases. Their educational value lies in transforming information that may otherwise appear disconnected into a meaningful retrieval cue.

The use of mnemonics is relevant to nursing because students frequently need to remember ordered steps, assessment components, classifications, terminology, principles of care, and lists of related concepts. Examples used in nursing education include SAMPLE for components of a focused history and ADPIE for the nursing process. Mnemonic strategies may be especially useful when they are linked to meaningful clinical concepts rather than used as substitutes for understanding. Research on learning science also indicates that retrieval practice, spacing, elaboration, and active engagement can strengthen long-term retention.

Evidence from health-professions education suggests that structured learning strategies can improve academic outcomes. Studies of mnemonic-based instruction have reported positive effects on recall and learner perceptions, although outcomes vary according to the type of mnemonic, content, learner characteristics, and method of implementation. Mnemonics should therefore be taught as one component of a broader learning strategy that includes understanding, practice, retrieval, and application.

The present study was undertaken to compare knowledge and practice regarding mnemonics among first-year and final-year B.Sc. Nursing students. The study also considered selected demographic characteristics and previous sources of information. The findings were intended to identify learning needs and provide a basis for developing an information booklet that could support students and teachers in the purposeful use of mnemonic strategies.

AIM AND OBJECTIVES

Aim: To compare knowledge and practice regarding mnemonics among first-year and final-year B.Sc. Nursing students and to develop an information booklet based on identified learning needs.

- To assess the level of knowledge regarding mnemonics among first-year B.Sc. Nursing students.
- To assess the level of knowledge regarding mnemonics among final-year B.Sc. Nursing students.
- To assess the level of practice regarding mnemonics among first-year B.Sc. Nursing students.
- To assess the level of practice regarding mnemonics among final-year B.Sc. Nursing students.
- To compare knowledge and practice scores between first-year and final-year students.
- To determine the relationship between knowledge and practice scores.
- To identify associations between knowledge/practice and selected demographic variables.
- To develop an information booklet on mnemonics based on the identified educational needs.

METHODOLOGY

A quantitative comparative research approach was adopted. The study was conducted among B.Sc. Nursing students in selected nursing colleges in Kolar. The accessible population comprised first-year and final-year B.Sc. Nursing students who met the specified eligibility criteria. The sample consisted of 80 students: 40 first-year students and 40 final-year students. A non-probability purposive sampling technique was used. Students who were willing to participate and satisfied the inclusion criteria were included; students who were not cooperative or did not meet the criteria were excluded.

The study variables were knowledge and practice regarding mnemonics. Selected demographic variables included age, gender, religion, type of family, area of residence, marital status of

parents, caretaker, educational status of parents, parental occupation, monthly family income, year of study, previous knowledge regarding mnemonics, and source of information.

Data collection was carried out after obtaining permission from the concerned authorities. First-year and final-year students were approached in separate sessions. The purpose of the study was explained, informed consent was obtained, and participants were assured that participation was voluntary and information would be kept confidential. The Structured Knowledge Questionnaire (SKQ) was used to assess knowledge regarding the meaning, principles, memory processes, factors affecting memory, and types and uses of mnemonics. The Structured Practice Questionnaire (SPQ) was used to assess reported practice related to mnemonic use. An information booklet was prepared from the identified content areas and learning needs.

The knowledge assessment comprised 33 items, covering introduction and definition, memory process and types of memory, factors influencing memory, and tips to improve memory including types of mnemonics. The maximum knowledge score was 33. Practice was assessed using a 15-item instrument with a maximum score of 56. Knowledge was categorized as poor or average according to the scoring scheme used in the original study, while practice was categorized as unfavorable, favorable, or most favorable.

Data were analyzed using descriptive and inferential statistics. Frequencies, percentages, means, medians, and standard deviations were calculated. Group differences were examined using t-test statistics. Pearson's correlation coefficient was used to examine the relationship between knowledge and practice. Chi-square tests were used to examine associations between categorized knowledge/practice levels and selected demographic variables. A significance level of 0.05 was considered for inferential interpretation. Because the first-year and final-year groups comprised different students, the comparison is appropriately interpreted as an independent-group comparison rather than a paired pre-test/post-test design.

RESULTS

Eighty students participated in the study, with equal representation of first-year (n=40) and final-year (n=40) B.Sc. Nursing students. The demographic profile showed that most first-year students were 18–19 years old (33; 82.5%), whereas most final-year students were 22–25 years old (22; 55.0%). First-year students were predominantly male (26; 65.0%), while final-year students were predominantly female (32; 80.0%). A nuclear family structure was reported by 30 (75.0%) students in each group. First-year students were more frequently from rural areas (24; 60.0%), whereas final-year students were more frequently from urban areas (17; 42.5%).

Previous knowledge of mnemonics was reported by 24 (60.0%) first-year students and 31 (77.5%) final-year students. Among first-year students, 16 (40.0%) reported no source of information, while television/internet was reported by 13 (32.5%). Among final-year students, newspapers/magazines were reported as a source by 19 (47.5%), followed by no source of information in 9 (22.5%). These findings indicate that exposure to mnemonic concepts was

present in both groups but varied considerably by educational stage and information source.

Knowledge levels were predominantly poor in both groups. Among first-year students, 35 (87.5%) had poor knowledge and 5 (12.5%) had average knowledge. Among final-year students, 31 (77.5%) had poor knowledge and 9 (22.5%) had average knowledge. The first-year group had a maximum observed knowledge score of 24, mean 12.25, mean percentage 30.62%, median 12, and SD 3.74. The final-year group had a maximum observed score of 25, mean 13.68, mean percentage 34.20%, median 14, and SD 3.067.

Practice was more favorable than knowledge in both groups. First-year students included 31 (77.5%) with favorable practice, 8 (20.0%) with unfavorable practice, and 1 (2.5%) with most favorable practice. Final-year students included 33 (82.5%) with favorable practice, 2 (5.0%) with unfavorable practice, and 5 (12.5%) with most favorable practice. The mean practice score was 32.13 (SD 6.313) among first-year students and 37.25 (SD 5.465) among final-year students.

The overall knowledge mean difference between groups was 1.42, with a reported t value of 1.863. Using the reported t statistic with 78 degrees of freedom, the two-sided p value is approximately 0.066; therefore, the difference should be described as not statistically significant at the 0.05 level. The practice mean difference was 5.10 with a reported t value of 3.863, corresponding to $p < 0.001$ and indicating a statistically significant difference in the reported practice scores.

Pearson's correlation for the combined sample was $r = 0.042$ ($p = 0.711$), indicating no statistically significant relationship between overall knowledge and practice. For first-year students, $r = 0.026$ ($p = 0.874$), and for final-year students, $r = 0.145$ ($p = 0.371$), again indicating no statistically significant relationship. The source data also reported significant associations between several demographic variables and categorized knowledge/practice outcomes. These associations should be interpreted cautiously because numerous variables were examined and the source tables do not provide the individual chi-square values and degrees of freedom in the condensed manuscript data.

Table 1. Area-wise Analysis of Knowledge and Practice Scores: First-Year Students (N=40)

Knowledge/practice area	Items	Maximum score	Maximum observed score	Mean	Mean %	Median	SD
Introduction, Definition	6	6	5	2.60	43.33	3	1.257
Memory process and types of memory	8	8	5	2.98	37.25	3	1.330
Factors influencing memory	6	6	5	2.20	36.60	2	1.305

Tips to improve memory (types of mnemonics)	13	13	9	4.48	34.46	4	2.100
Overall Knowledge	33	33	24	12.25	30.62	12	3.740
Practice	15	56	47	32.13	57.37	31	6.313

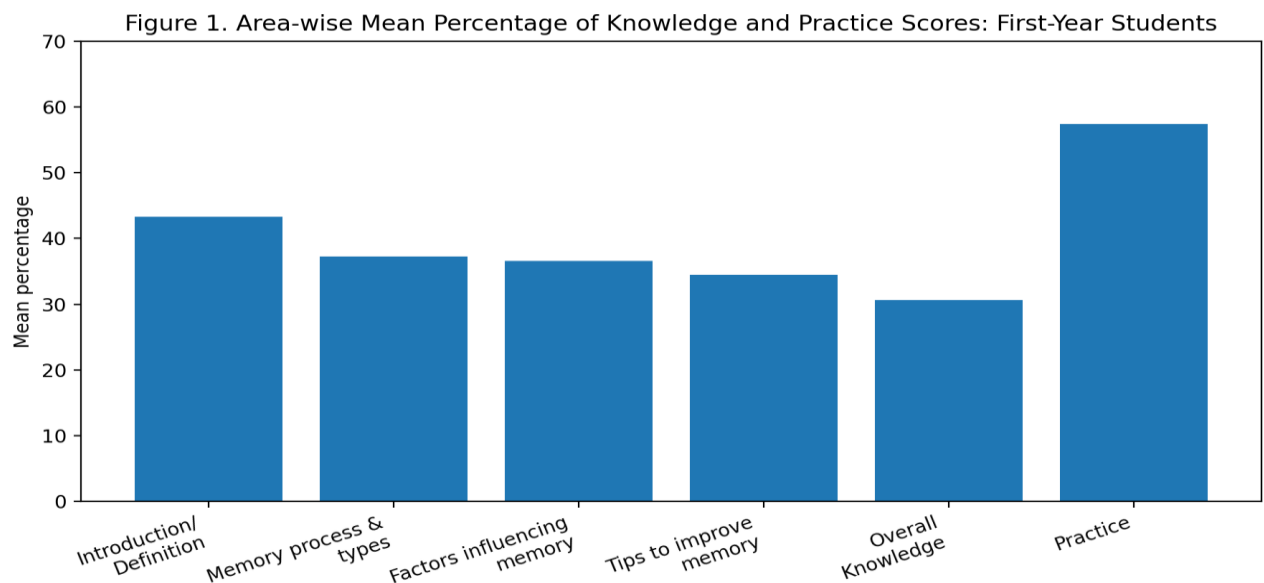


Figure 1. Area-wise mean percentage of knowledge and practice scores among first-year B.Sc. Nursing students.

Table 2. Area-wise Analysis of Knowledge and Practice Scores: Final-Year Students (N=40)

Knowledge/practice area	Items	Maximum score	Maximum observed score	Mean	Mean %	Median	SD
Introduction, Definition	6	6	5	2.35	39.16	2	1.292
Memory process and types of memory	8	8	5	2.73	34.12	3	1.377
Factors influencing memory	6	6	5	2.83	47.16	3	1.059
Tips to improve memory (types of mnemonics)	13	13	10	5.78	44.46	6	1.954
Overall Knowledge	33	33	25	13.68	34.20	14	3.067
Practice	15	56	48	37.25	66.51	37.5	5.465

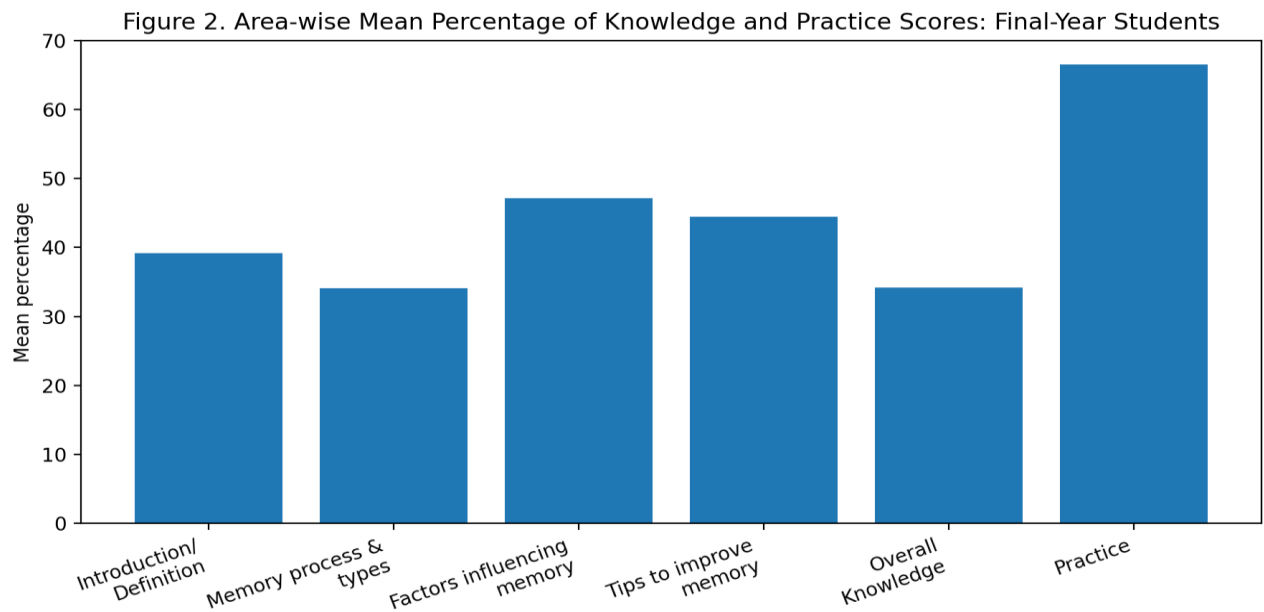


Figure 2. Area-wise mean percentage of knowledge and practice scores among final-year B.Sc. Nursing students.

Table 3. Comparison of Knowledge and Practice Scores Between First- and Final-Year Students (N=80)

Area	First-year Mean	First-year SD	Final-year Mean	Final-year SD	Mean difference	t value	Interpretation*
Introduction, Definition	2.60	1.257	2.35	1.292	0.25	0.877	NS
Memory process and types of memory	2.98	1.330	2.73	1.377	0.25	0.826	NS
Factors influencing memory	2.20	1.305	2.83	1.059	0.62	2.352	Significant
Tips to improve memory	4.48	2.100	5.78	1.954	1.30	2.866	Significant
Overall Knowledge	12.25	3.740	13.68	3.067	1.42	1.863	NS
Overall Practice	32.13	6.313	37.25	5.465	5.10	3.863	Significant

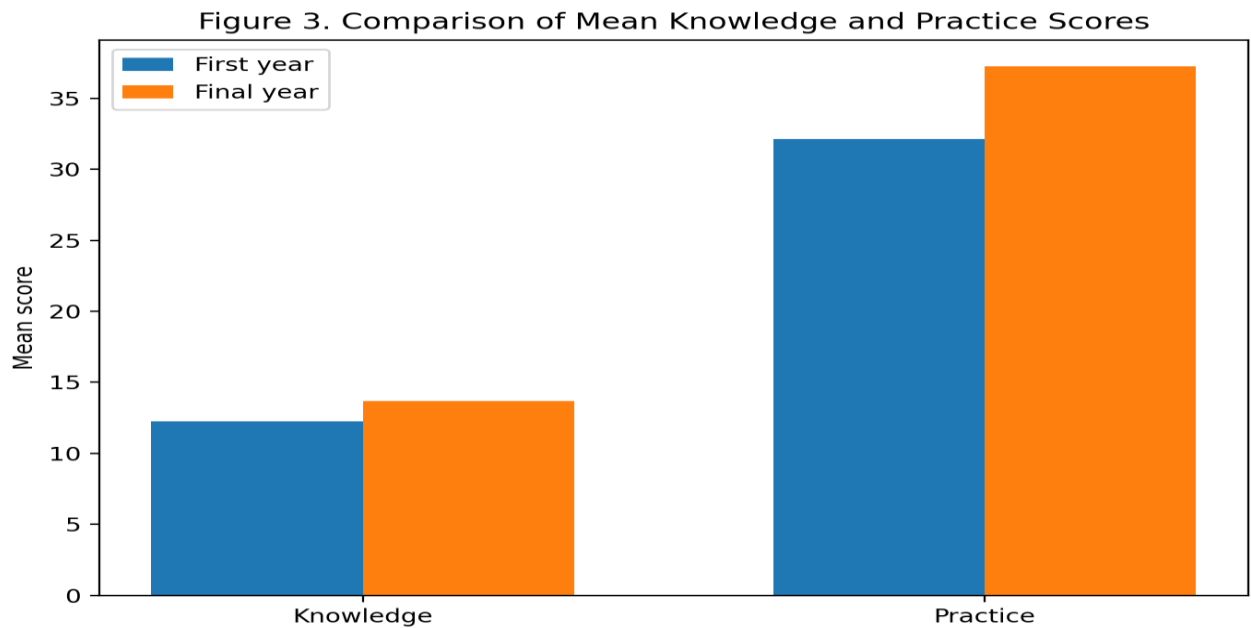


Figure 3. Comparison of mean knowledge and practice scores between first-year and final-year B.Sc. Nursing students.

Table 4. Correlation Between Overall Knowledge and Practice Scores (N=80)

Variables	Mean	SD	Pearson r	p value	Inference
Overall Knowledge of First & Final Year	12.96	3.473	0.042	0.711	NS
Overall Practice of First & Final Year	34.68	6.404	0.042	0.711	NS

Table 5. Correlation Between Knowledge and Practice: First-Year Students (N=40)

Variables	Mean	SD	Pearson r	p value	Inference
Knowledge	12.25	3.740	0.026	0.874	NS
Practice	32.13	6.313	0.026	0.874	NS

Table 6. Correlation Between Knowledge and Practice: Final-Year Students (N=40)

Variables	Mean	SD	Pearson r	p value	Inference
Knowledge	13.68	3.067	0.145	0.371	NS
Practice	37.25	5.465	0.145	0.371	NS

DISCUSSION

The present study demonstrates a clear difference between students' reported practice of using mnemonics and their measured knowledge of mnemonic concepts. Although final-year students had a higher mean knowledge score than first-year students, the overall knowledge difference was not statistically significant at the conventional 0.05 level. The practice score, however, was higher among final-year students and the reported t value indicates a statistically

significant difference. This pattern may reflect greater exposure to nursing content and clinical learning opportunities as students progress through the programme.

The finding that 87.5% of first-year and 77.5% of final-year students had poor knowledge indicates that familiarity with individual memory aids does not necessarily translate into systematic knowledge of mnemonic strategies. More than half of students in both groups reported previous knowledge of mnemonics, yet knowledge scores remained relatively low. This suggests that mnemonics may be encountered informally without being taught as a structured learning strategy.

The final-year group showed higher scores in several content domains, particularly factors influencing memory and tips for improving memory. The area-wise results indicate that the content related to types and uses of mnemonics was stronger among final-year students, although the study design cannot determine whether this difference resulted from year of study, prior exposure, individual learning habits, or other factors.

The absence of a significant correlation between knowledge and practice is also important. Knowledge of a learning strategy and actual use of that strategy are related but distinct constructs. A student may know that mnemonics are useful but may not use them regularly, or may use familiar mnemonics without being able to explain their underlying principles. Educational interventions should therefore combine explanation with guided practice, examples, opportunities to create mnemonics, and retrieval-based activities.

The findings are broadly consistent with the educational literature supporting active learning and retrieval-based strategies. Research has shown that retrieval practice can strengthen long-term retention, while studies of mnemonic-based teaching in medical and health-professions education have reported benefits in recall, learner perceptions, or assessment performance. Studies of nursing education have also described mnemonic strategies as practical tools for teaching care planning and clinical concepts. However, the evidence does not mean that mnemonics should replace conceptual understanding. Their value is greatest when the cue is accurate, meaningful, and connected to an underlying concept.

The information booklet developed from the study findings can therefore serve as a supplementary educational resource. It should introduce major types of mnemonics, explain how to construct and evaluate them, and provide nursing-specific examples. Faculty can integrate these examples into classroom teaching and encourage students to create their own cues and test their recall. Future research should evaluate the booklet prospectively using a validated pre-test/post-test design with an appropriate comparison group.

ETHICAL CONSIDERATIONS

Formal permission was obtained from the concerned authorities before data collection. Participants were informed about the purpose and procedure of the study, and participation was voluntary. Informed consent was obtained before administration of the questionnaires.

Confidentiality and privacy of participants were maintained, and the information collected was used for academic/research purposes. No participant was identified in the manuscript by name or other direct identifier. The information booklet was provided as an educational resource after data collection.

STRENGTHS AND LIMITATIONS

The study included equal numbers of first-year and final-year students and used structured instruments to assess both knowledge and practice. It also considered multiple demographic characteristics and developed an educational resource from the identified learning needs. However, the sample was relatively small and selected purposively from selected nursing colleges in one geographic area, limiting generalizability. The cross-sectional comparative design cannot establish causality or prove that progression through the nursing programme caused the observed differences. Practice was assessed using a structured questionnaire and may therefore be influenced by self-report bias. In addition, the source data contain inconsistent significance labels in one comparison table; the present manuscript interprets the reported t statistics using an independent-group framework. Individual chi-square statistics were not available in the condensed source data and therefore are not reproduced in detail.

CONCLUSION

The study found that poor knowledge regarding mnemonics was common among both first-year and final-year B.Sc. Nursing students, while favorable practice was reported by most students. Final-year students had higher mean knowledge and practice scores than first-year students. The reported knowledge difference was not statistically significant, whereas the practice difference was statistically significant. No significant relationship was found between knowledge and practice scores. The findings support systematic teaching of mnemonic strategies as a supplementary learning method in nursing education. An information booklet developed from the identified content areas may provide a practical reference for students and faculty. Future experimental studies should evaluate whether structured mnemonic teaching improves knowledge retention, academic performance, and clinical application.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest related to this study.

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