



# Characteristics of Diverse Verbal Pain Descriptors in South Korean Patients With Peripheral Neuropathic Pain: ‘Jeorim’ (Tingling) and ‘Sirim’ (Cold) as Key Neuropathic Pain Descriptors

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**Background and Purpose** The description of pain is the most-important indicator leading to the adequate treatment of patients with neuropathic pain (NeP). The purpose of this study was to identify and characterize the unique features of Korean verbal descriptions in patients with peripheral NeP.

**Methods** This study included 400 patients (167 males and 233 females) and their 1,387 pain-description responses. Patients with peripheral NeP freely described their symptoms in Korean. Collected verbal descriptions were grouped according to terminologies with similar meanings. Participants completed validated patient-reported outcome scales including the neuropathic pain symptom inventory (NPSI) and painDETECT questionnaire (PD-Q). The frequencies of each verbal pain descriptor were compared between the NPSI and PD-Q scores.

**Results** ‘Jeorim’ (tingling) was the most common among 17 types of organized verbal pain descriptors, and the ‘Sirim’ (cold) symptom had a significantly higher rate of use in the 2 high-severity groups when participants were classified by their total scores on the NPSI and PD-Q.

**Conclusions** Korean verbal NeP descriptors were significantly diverse. The *Jeorim* (tingling) and *Sirim* (cold) descriptors can be utilized in evaluations of Korean patients with NeP.

**Keywords** pain; peripheral nervous system diseases; neuralgia; polyneuropathies; postherpetic neuralgia.

## INTRODUCTION

Neuropathic pain (NeP) is caused by a lesion in or a disease of the somatosensory system.<sup>1</sup> Early detection and long-term management of NeP are important, but its diagnosis is challenging due to the difficulty of evaluating the pathological nervous system. NeP has characteristics that consist of ‘positive’ and ‘negative’ symptoms.<sup>2</sup> Positive signs and symptoms include spontaneously evoked pain and other abnormal sensations such as tingling (i.e., paresthesia),<sup>2</sup> while negative signs and symptoms are numbness, weakness, and loss of deep tendon reflex.<sup>2</sup> Detecting these symptomatic characteristics during a medical visit is crucial for appropriate NeP management.<sup>3</sup> However, the complexity of sensory phenotypes among NeP patients makes it difficult to accurately discriminate between these clinical features. Moreover, although most of the information necessary for making medical decisions is obtained from patient descriptions, experiencing and describing NeP can cause comorbid anxiety, anger, hostility, confusion, and bewilderment.<sup>4</sup> These pitfalls impede practical treatment approaches by delaying early diagnosis and interfering with measure-

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ments of patient responses to treatment. For this reason, several studies on verbal descriptions of NeP were conducted in an attempt to develop simple assessment tools.<sup>5-12</sup> Though assessment tools such as patient-reported outcomes (PROs) that use verbal descriptions of NeP have been developed, additional validation is required for medical evaluations due to the differences in language and cultural backgrounds between regions. The verbal description of pain is also receiving more attention because the phenotype of NeP is known to be more closely related to its pathophysiology than its etiology.<sup>13,14</sup>

It is therefore essential to adapt analyses of pain descriptions to different cultures. Nevertheless, there has been no meaningful study of the characteristics of NeP descriptors used by Korean patients with NeP. The purpose of this study was to therefore identify and analyze the unique features of Korean verbal descriptions in peripheral NeP and compare them with validated PROs for NeP.

## METHODS

A cross-sectional observational study was performed at five tertiary medical centers. All enrolled Korean participants were diagnosed with 'probable' or 'definite' NeP according to NeP diagnostic criteria. The diagnoses were based on the updated grading system for NeP suggested by the International Association for the Study of Pain (IASP) Special Interest Group on Neuropathic Pain (NeuPSIG) in 2016.<sup>15</sup> Participants had their history, comorbidities, neuroanatomically relevant neurological lesions, sensory signs, and outcomes of confirmatory tests determined by neuromuscular specialists according to the IASP NeuPSIG criteria.<sup>15</sup> In order to comply with these diagnostic criteria, various diagnostic tests had to be performed, including neurophysiological tests, quantitative sudomotor axon reflex tests, autonomic function screening tests, serological tests, imaging techniques, and genetic tests.<sup>15,16</sup> Patients were excluded from the study if their pain expressions were impeded by mental illness or a poor ability in speaking Korean. Patients younger than 20 years and with other types of pain in addition to peripheral NeP were excluded from the study. Subjects continued to receive medications for controlling peripheral NeP after being enrolled in the study.

Patient data on age, sex, height, weight, past medical history, etiology of peripheral NeP, prescribed medications for treating NeP, and illness duration were collected. Patients with NeP freely described their symptoms in Korean. They provided PROs by completing the neuropathic pain symptom inventory (NPSI) and painDETECT questionnaire (PD-Q) in the presence of a researcher. Data were collected in a

single visit between October 2018 and June 2020.

The various verbal descriptions of the participants were grouped by a psychology expert according to terminologies with similar meanings. The frequency of each organized pain descriptor was measured among the total verbal responses collected from the participants. Patients were divided into three groups according to their severity on the NSPI: mild, score of 0-3; moderate, 4-6; and severe, 7-10. Patients were also divided into three groups for the likelihood of NeP according to their total PD-Q score: highly likely, score of  $\geq 19$ ; unlikely,  $\leq 12$ ; and unclear, 13-18. The frequency of each verbal pain descriptor were compared among NPSI and PD-Q scores independently. The chi-square test was used to analyze the frequencies of responses in each group. To confirm that the PROs effectively analyzed pain in this study, correlation analysis was performed by measuring the Pearson correlation coefficient between NPSI and PD-Q scores. All statistical analyses were performed using Statistical Analysis System software (version 9.4; SAS Institute Inc., Cary, NC, USA).

This study was reviewed and approved by the Institutional Review Board of Ajou University Hospital (IRB No. MED-OBS-18-204), Konkuk University Medical Center (IRB No. KUH1170178), Nowon Eulji Medical Center (IRB No. 2018-06-013), Chungnam National University Hospital (IRB No. 2018-07-034) and Kangbuk Samsung Hospital (IRB No. 2018-06-050). Informed consent was obtained from each participant, who also had the right to refuse to participate in the study.

## RESULTS

### Participant characteristics

This study included 400 patients (167 males and 233 females) aged  $61.59 \pm 11.94$  years (mean  $\pm$  SD) (Table 1). College-graduated patients were the most common (122, 28.00%). The etiologies of neuropathy included polyneuropathy in 325 (81.25%) patients, mononeuropathy in 49 (12.25%) patients, and postherpetic neuralgia in 26 (6.50%) patients. Metabolic factors were the most-common causes of polyneuropathy, and diabetes was the most common among them (Table 1). The duration of neuropathy was  $1.75 \pm 2.74$  years. Neuropathy diagnoses were performed on 92 (23.00%) patients at the time of enrollment in this study and on the remaining 308 (76.00%) patients before enrollment. Among the previously diagnosed patients, 287 (71.25%) took prescribed medication to alleviate NeP, and all patients reported their medication use. Among 680 responses, the most commonly administered drugs were gabapentinoids (69.41%), followed by opioids (15.00%) and antidepressants (10.74%) (Supplemen-

**Table 1.** Participant characteristics

Parameter	Value
Sex	
Male	167 (41.75)
Female	233 (58.25)
Age, years	61.59±11.94
Education	
Elementary-school graduate	69 (17.30)
Middle-school graduate	63 (15.80)
High-school graduate	96 (24.00)
College graduate	112 (28.00)
No response	60 (15.00)
Etiology of neuropathic pain	
Polyneuropathy	325 (81.25)
Metabolic cause: diabetes	166
Metabolic cause: alcohol	20
Metabolic cause: chemotherapeutic agent	55
Metabolic cause: other drugs	6
Idiopathic cause	22
Others	56
Mononeuropathy	49 (12.25)
Postherpetic neuralgia	26 (6.50)
Total participants	400 (100)

Data are *n*, *n* (%), or mean±SD values.

tary Table 1 in the online-only Data Supplement).

### Korean verbal descriptors of peripheral NeP

Among the 400 patients, 1,387 symptoms were freely described verbally using pain descriptors. A psychology expert organized these 1,387 descriptions into 17 types of verbal descriptors (Table 2 and Supplementary Table 2 in the online-only Data Supplement). Among these 17 types, the 'Jeorim' (tingling) symptom was the most-common response (372 responses, 26.82%), followed by the 'Jjillim' (sting; *n*=142, 10.24%), 'Doonham' (numbness; *n*=141, 10.17%), 'Sirim' (cold; *n*=134, 9.66%), and electric-shock-like (*n*=119, 8.58%) symptoms. Ninety-seven verbal expressions did not consist of the other 17 types of descriptors. There were 69 descriptions that were not descriptions of pain, instead being other descriptions such as emotional expressions.

Among 325 patients with polyneuropathy, the most frequently used Korean pain descriptor for symptom complaint was *Jeorim* (tingling), which was used by 211 (64.92%) patients. Other common descriptors were *Doonham* (numbness), *Sirim* (cold), and *Jjillim* (sting), which 91 (28.00%), 87 (26.77%), and 84 (25.86%) patients complained of, respectively (Table 3 and Fig. 1). Among 49 patients with mononeuropathy, *Jeorim* (tingling) was also used most commonly by 36 (73.47%) patients, *Doonham* (numbness) was used

**Table 2.** Pain descriptors in South Korean patients with peripheral neuropathic pain

No.	Verbal descriptors	Number of responses (%)
1	<i>Jeorim</i> *, tingling	372 (26.82)
2	<i>Jjillim</i> *, sting	142 (10.24)
3	<i>Doonham</i> *, numbness	141 (10.17)
4	<i>Sirim</i> *, cold	134 (9.66)
5	Electric-shock-like	119 (8.58)
6	Burning	73 (5.26)
7	Throbbing	57 (4.11)
8	Heavy sensation	45 (3.24)
9	Tight sensation	39 (2.81)
10	Fiery dull	35 (2.52)
11	Powerless	18 (1.30)
12	Squeezing sensation	15 (1.08)
13	Itching	13 (0.94)
14	Bitter sensation	8 (0.58)
15	Pressing sensation	5 (0.36)
16	Digging sensation	3 (0.22)
17	Cutting sensation	2 (0.14)
18	Other (not one of the above pain descriptors)	97 (6.99)
19	Unclassifiable (not pain descriptors; e.g., emotional expression)	69 (4.97)
	Total responses	1,387 (100)

\*Korean reading sounds were written in English. The Korean version is in Supplementary Table 2 (in the online-only Data Supplement).

by 21 (42.86%) patients, and electric-shock-like sensation was used by 16 (32.65%) patients. On the other hand, among 26 patients with postherpetic neuralgia, the most-common descriptor was electric-shock-like sensation (mentioned by 8 patients), followed by *Jeorim* (tingling), *Jjillim* (sting), and throbbing sensation being mentioned by 7 (26.92%) patients, and 5 (19.23%) patients mentioning itching sensation. No patients with postherpetic neuralgia complained of the *Sirim* (cold) pain.

### Comparison of verbal NeP descriptors and PROs

Among the 400 participants, the total scores on the NPSI and PD-Q were 25.30±18.55 and 14.57±6.46, respectively. On the NPSI, the paresthesia/dysesthesia component had the highest score of 4.2±2.4, while the tingling sensation had the highest score of 3.3±1.5 on a seven-point Likert scale on the PD-Q (Supplementary Table 3 in the online-only Data Supplement). The coefficient for the correlation between the total NPSI and PD-Q scores was 0.7518, indicating a strong positive correlation (*p*<0.0001, Supplementary Fig. 1 in the online-only Data Supplement).

Using the total NPSI score to assess the severity of 400 pa-

**Table 3.** Numbers of patients who complained of each pain descriptor according to etiology and patient-reported outcome scores (multiple responses were possible)

Verbal descriptor	Etiology			p	NPSI severity (score)			PainDETECT questionnaire score				
	Polyneuropathy (n=325)	Mononeuropathy (n=49)	Posttherapeutic neuralgia (n=26)		Mild (0-3, n=287)	Moderate (4-6, n=100)	Severe (7-9, n=13)	p	≤12 (n=169)	13-18 (n=116)	≥19 (n=115)	
Jeorim*, tingling	211	36	7	0.0002 <sup>†</sup>	181	66	7	0.6651	104	77	73	0.7063
Jjillim*, sting	84	7	7	0.2055	63	32	3	0.1311	39	26	33	0.4602
Doonham*, numbness	91	21	1	0.0017 <sup>†</sup>	81	28	4	0.9783	40	34	39	0.1625
Sirrim*, cold	87	8	0	0.0037 <sup>†</sup>	65	23	7	0.0346 <sup>†</sup>	42	18	35	0.0261 <sup>†</sup>
Electric-shock-like	74	16	8	0.2418	69	27	2	0.6205	35	37	26	0.0835
Burning	50	3	2	0.1394	36	17	2	0.5294	23	16	16	0.9972
Throbbing	32	1	7	0.0039 <sup>†</sup>	30	9	1	0.8810	25	6	9	0.0191 <sup>†</sup>
Heavy sensation	31	6	3	0.7597	25	13	2	0.3774	14	10	16	0.2523
Tight sensation	21	1	0	0.3082	13	5	4	0.0003 <sup>†</sup>	8	6	8	0.7103
Fiery dull	23	2	0	0.4056	16	9	0	0.3041	13	8	4	0.3344
Powerless	11	5	1	0.0770	14	3	0	0.7612	3	6	8	0.0800
Squeezing sensation	11	0	1	0.4082	6	6	0	0.1557	6	1	5	0.2057
Itching	4	2	5	0.0002 <sup>†</sup>	7	4	0	0.6435	2	5	4	0.2258
Bitter sensation	6	0	0	1.0000	5	0	1	0.1029	2	2	2	1.0000
Pressing sensation	1	0	0	1.0000	1	0	0	1.0000	1	0	0	1.0000
Digging sensation	2	0	0	1.0000	0	2	0	0.1261	0	1	1	0.3329
Cutting sensation	1	1	0	0.3402	1	0	1	0.0640	0	0	2	0.0821
Other (not one of the above pain descriptors)	68	4	4	0.0934	40	32	4	0.0002 <sup>†</sup>	29	19	28	0.2202
Unclassifiable (not pain descriptors; e.g., emotional expression)	30	10	5	0.0287 <sup>†</sup>	29	15	1	0.3771	18	11	16	0.5378

\*Korean reading sounds were written in English; <sup>†</sup>p<0.05 on the chi-square test. NPSI, neuropathic pain symptom inventory.

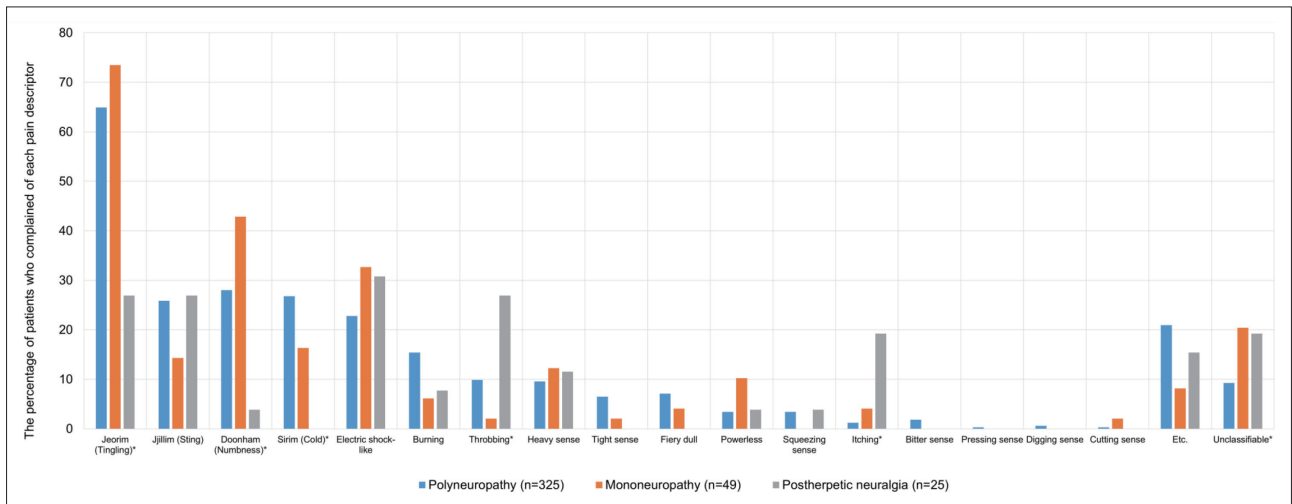


Fig. 1. Percentage of patients who complained of each pain descriptor according to etiology (multiple responses were possible; \* $p < 0.05$  on the chi-square test).

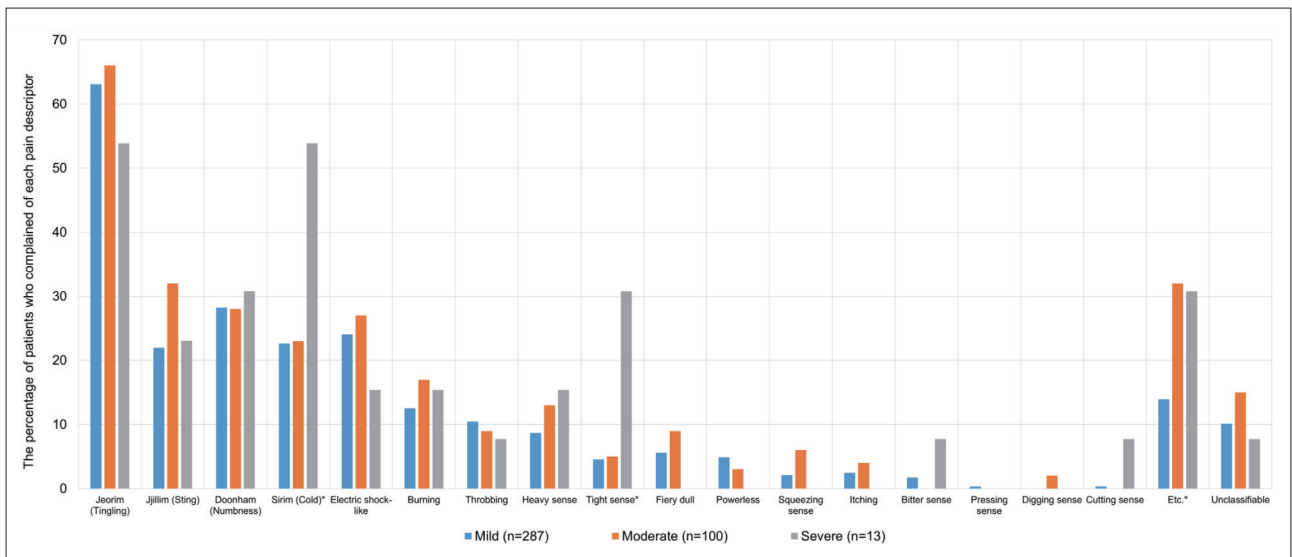


Fig. 2. Percentage of patients who complained of each pain descriptor according to total score on the neuropathic pain symptom inventory (multiple responses were possible; \* $p < 0.05$  on the chi-square test).

tients resulted in 287 patients (71.75%) in the mild group, 100 (25.00%) in the moderate group, and 13 (3.25%) in the severe group. *Jeorim* (tingling) was the most-common verbal pain descriptor in all groups (Table 3 and Fig. 2). Descriptors with significantly different frequencies in the groups classified by severity on the NPSI were as follows: *Sirim* (cold) was mentioned by 65 (22.65%) patients in the mild group, by 23 (23.00%) in the moderate group, and by 7 (53.85%) in the severe group ( $p < 0.0346$ ); while a tight sensation was mentioned by 13 (4.53%) patients in the mild group, 5 (5.00%) in the moderate group, and 4 (30.77%) in the severe group ( $p < 0.0003$ ).

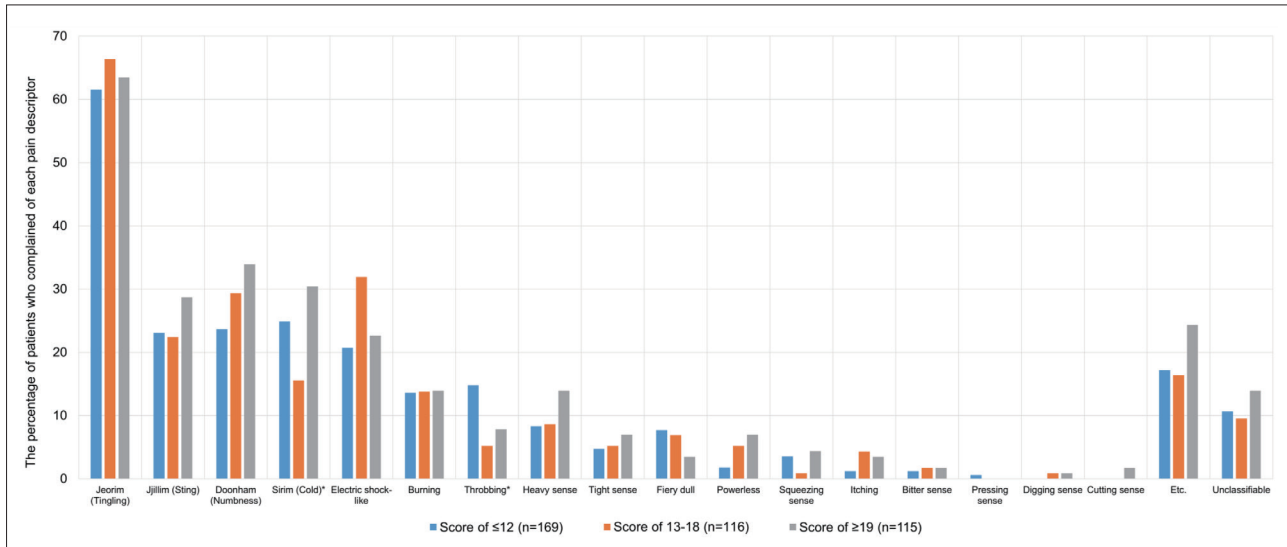
On the PD-Q, 169 (42.25%) of the 400 participants scored 12 or less, 116 (29.00%) scored 13–18, and 115 (28.75%) scored

19 or higher. *Jeorim* (tingling) was the most-common verbal pain descriptor in all groups (Table 3 and Fig. 3). Descriptors with significantly different frequencies in the groups classified by PD-Q scores were as follows: *Sirim* (cold) was mentioned by 42 (24.85%) patients with scores of 12 or below, by 18 (15.52%) with scores of 13–18, and by 35 (30.43%) with scores of 19 or higher ( $p < 0.0261$ ); while throbbing sensation was mentioned by 25 (14.79%) patients with scores of 12 or below, by 6 (5.17%) with scores of 13–18, and by 9 (7.83%) with scores of 19 or higher ( $p < 0.0191$ ).

## DISCUSSION

In clinical practice, most diagnoses and treatments for pa-





**Fig. 3.** Percentage of patients who complained of each pain descriptor according to total score on the painDETECT questionnaire (multiple responses were possible; \* $p < 0.05$  on the chi-square test).

tients with NeP are often performed when collecting the medical histories of patients. Among them, patient descriptions are the most-important information for detecting the characteristics of NeP. Sensory profiles has recently been considered instead of etiology to more adequately reflect the pathophysiological mechanisms of NeP.<sup>13</sup> Sensory phenotype can be assessed using quantitative sensory testing (QST); however, this method is restricted by it being time- and cost-consuming and requiring a skilled examiner. This means that there should be a greater emphasis on precisely understanding the verbal descriptions of patients in order to improve the effectiveness of medical treatment. Several screening tools (PROs) that use verbal descriptors have been developed and validated for different cultures to identify the sensory phenotype of each patient.<sup>17</sup> Nevertheless, there is an unmet need of utilizing these PROs in the Korean medical environment, considering that the Korean language has different origins and unique views about 'pain' relative to languages in Western cultures. For example, if the emotional expression of English 'heartbreaking' is translated into Korean without paraphrasing, it will be described as 'heart is painful.' This is because when in expressing unstable emotions, Korean language uses nociceptive expressions while Western languages use visual descriptions.<sup>18</sup> We therefore conducted this study as a starting point for systematizing pain descriptions in Korean.

First, we confirmed that Korean patients with peripheral NeP provided significantly diverse verbal pain descriptors. There were 17 types of NeP descriptors classified in this study, whereas the number of pain descriptor types employed by widely used PROs often does not exceed 10.<sup>6-12</sup> It is im-

portant to note that even though PROs have been sufficiently validated in different cultural backgrounds, their extensive use by clinicians is restricted by Korean patients with NeP often perceiving that the PROs they provide are insufficient for reflecting their symptoms.

It should be noted that several descriptions in this study did not belong to the above 17 groups (68 responses) or could not be classified (30 responses). One of the reasons for the varied Korean pain descriptors is that sensory words are often expressed synthetically.<sup>18-20</sup> In this study, there were cases where pain was described using words that directly express taste (bitter sensation), weight (heavy sensation), or behavior (digging or cutting sensation). In addition, as in the example of 'heartbreaking' above, it is a significant feature of Korean language that is closely connected to expressions of sadness and pain. It is possible to describe sadness with most of the terms used to describe pain, including tingling, numbness, burning, throbbing, and allodynia.<sup>18</sup> To describe extreme pain, some participants used emotional expressions instead of pain descriptors by using the above characteristics inversely,<sup>19,20</sup> which resulted in 30 responses not being classified as pain descriptors.

Considering the diversity of Korean pain descriptors, previous studies have suggested using as many as possible when evaluating Korean patients with NeP.<sup>21,22</sup> The results of this study could represent evidence to support this suggestion.

Second, the usage rate of the pain descriptor *Jeorim* was found to be consistently high despite the presence of various pain descriptors. *Jeorim* (tingling) refers to 'paresthesia,' or 'a bothersome ant crawling sensation.' *Jeorim* (tingling) was used frequently even when patients were classified by etiol-

ogy according to NPSI or PD-Q scores. The results of this study suggest that it is adequate to start with confirming the use of the *Jeorim* (tingling) sensation by applying a questionnaire to patients with peripheral NeP or by using PROs. It was also considered that *Jjillim* (sting), *Doonham* (numbness), and *Sirim* (cold) sensation descriptors can be used.

Third, it is expected that the *Sirim* (cold) sensation might be useable as a descriptor to reflect the severity of NeP symptoms. *Sirim* refers to an unpleasant cold sensation in a part of the body that is afflicted with disease. When the patients were classified by their total NPSI and PD-Q scores, the only descriptor that showed significantly a higher rate in the severe group on both scales was the *Sirim* (cold) symptom.

Small-fiber neuropathy (SFN) is generally characterized by sharp and severe NeP as a primary symptom, which contrasts with large-fiber neuropathy. SFN is considered the outcome of dysfunction in thin myelinated A $\delta$  and unmyelinated C fibers caused by the abnormal expression or function of sodium, potassium, and calcium channels.<sup>23</sup> A previous study found that *Sirim* (cold) is a common symptom in Korean patients with clinically suspected SFN.<sup>24</sup> The finding in the present study that patients in the severe group used the descriptor *Sirim* more frequently is consistent with the patients with SFN who complained of severe pain symptoms frequently using this word. *Sirim* (cold) sensation can therefore be used as a descriptor to estimate the severity or involved pathophysiological mechanism in patients with peripheral NeP, which is expected to be helpful for individualized treatment.

There were several limitations to this study. First, it may have been necessary to consider the etiology of peripheral NeP. Most participants had polyneuropathy. Similar numbers of patients with other etiologies, such as mononeuropathy and postherpetic neuralgia, were not analyzed. *Jeorim* (tingling) and *Sirim* (cold) sensation descriptors were significantly used the most frequently in patients with polyneuropathy. The *Doonham* (numbness) symptom was the most frequently used in patients with mononeuropathy. On the other hand, itching and throbbing sensations were used more frequently in those with postherpetic neuralgia (Fig. 2). It may be difficult to use the *Sirim* (cold) symptom as a standard indicator of the severity of each NeP etiology. The clinical applicability would have been more widespread if the patient group had been more diverse. Furthermore, patients with alcoholic neuropathy may also have a central NeP, such as subacute combined degeneration. Second, only 13 patients were classified into the severe group according to NPSI scores. The result that one-third of the participants had PD-Q scores of  $\leq 12$  was also unexpected given that this instrument detects elements of chronic pain in NeP early to select an ap-

propriate treatment, and is not a diagnostic criterion for NeP. These outcomes are thought to be related to humanitarian factors resulting in most subjects being treated for NeP while participating in this study. Nevertheless, considering that many patients with NeP have a refractory course,<sup>25</sup> it might not be adequate to estimate that treatment effects are the leading causes of these outcomes. Another factor to consider is that a researcher was present to assist when participants filled out the PROs, which might have resulted in the patients expressing their symptoms less actively. Illness duration should also be considered when interpreting the findings of this study. It is possible that lower NPSI scores were related to the patients in this study having a shorter illness duration. A follow-up study should therefore allocate patients equally to each group classified by PRO score. Third, many responses were unclassifiable or were classified as others. Because Korean pain descriptors are quite diverse, 400 patients and 1,387 responses might have been insufficient to reveal a consistent tendency. In particular, there were many responses containing emotional expressions in the categories of 'other' and 'unclassifiable.' It is considered necessary to use depression assessment instruments to assess participants in studies of verbal description. Additionally, these various Korean NeP descriptions were only assessed by a single psychologist, which may have been insufficient for a thorough analysis. Future studies should include more linguists, psychologists, and clinicians, and should cross-validate subtle language differences to reach more-reliable conclusions. Fourth, because tertiary medical centers in the Gangwon, Jeolla, Gyeongsang, and Jeju provinces were not included in this study, it is possible that the distinctive features of regional dialects were not considered.

This study was the first to focus on the unique verbal descriptors in the Korean language among patients with peripheral NeP. As the definition of pain continues to expand, the tendency to emphasize each individual experience also increases.<sup>26</sup> In line with this principle, this study could contribute to the clinical situation by analyzing various symptoms of Korean patients with peripheral NeP. In order to reflect the characteristics of Korean expression as it is and discuss it with more researchers, the four most-common Korean pain descriptors were written in English. More advanced follow-up studies should be conducted, such as those that examine verbal NeP descriptors using a device capable of more precise sensory profiling such as QST. Research on nociceptive pain descriptors should also be conducted in parallel to specifically utilize pain descriptors for each type of pain.

## Supplementary Materials

The online-only Data Supplement is available with this article at <https://doi.org/10.3988/jcn.2022.0105>.

## Availability of Data and Material

Data sharing not applicable to this article as no datasets were generated or analyzed during the study.

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## Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

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## REFERENCES

- Baron R. Mechanisms of disease: neuropathic pain—a clinical perspective. *Nat Clin Pract Neurol* 2006;2:95-106.
- Gilron I, Baron R, Jensen T. Neuropathic pain: principles of diagnosis and treatment. *Mayo Clin Proc* 2015;90:532-545.
- Baron R, Binder A, Wasner G. Neuropathic pain: diagnosis, pathophysiological mechanisms, and treatment. *Lancet Neurol* 2010;9:807-819.
- Ichiseki T. Pain diary as a treatment tool for patients with numbness, pain and mood disturbance. *Psychiatry Clin Neurosci* 2002;56:593-594.
- Boureau F, Doubrère JF, Luu M. Study of verbal description in neuropathic pain. *Pain* 1990;42:145-152.
- Krause SJ, Backonja MM. Development of a neuropathic pain questionnaire. *Clin J Pain* 2003;19:306-314.
- Bouhassira D, Attal N, Fermanian J, Alchaar H, Gautron M, Masquellier E, et al. Development and validation of the neuropathic pain symptom inventory. *Pain* 2004;108:248-257.
- Bouhassira D, Attal N, Alchaar H, Boureau F, Brochet B, Bruxelle J, et al. Comparison of pain syndromes associated with nervous or somatic lesions and development of a new neuropathic pain diagnostic questionnaire (DN4). *Pain* 2005;114:29-36.
- Freyenhagen R, Baron R, Gockel U, Tölle TR. painDETECT: a new screening questionnaire to identify neuropathic components in patients with back pain. *Curr Med Res Opin* 2006;22:1911-1920.
- Bennett M. The LANSS pain scale: the Leeds assessment of neuropathic symptoms and signs. *Pain* 2001;92:147-157.
- Portenoy R. Development and testing of a neuropathic pain screening questionnaire: ID pain. *Curr Med Res Opin* 2006;22:1555-1565.
- Galer BS, Jensen MP. Development and preliminary validation of a pain measure specific to neuropathic pain: the neuropathic pain scale. *Neurology* 1997;48:332-338.
- Baron R, Förster M, Binder A. Subgrouping of patients with neuropathic pain according to pain-related sensory abnormalities: a first step to a stratified treatment approach. *Lancet Neurol* 2012;11:999-1005.
- Baron R, Maier C, Attal N, Binder A, Bouhassira D, Cruccu G, et al. Peripheral neuropathic pain: a mechanism-related organizing principle based on sensory profiles. *Pain* 2017;158:261-272.
- Finnerup NB, Haroutounian S, Kamerman P, Baron R, Bennett DLH, Bouhassira D, et al. Neuropathic pain: an updated grading system for research and clinical practice. *Pain* 2016;157:1599-1606.
- Haanpää M, Attal N, Backonja M, Baron R, Bennett M, Bouhassira D, et al. NeuPSIG guidelines on neuropathic pain assessment. *Pain* 2011;152:14-27.
- Bouhassira D, Attal N. Diagnosis and assessment of neuropathic pain: the saga of clinical tools. *Pain* 2011;152(3 Suppl):S74-S83.
- Kim JH. A study on the pain expression in Korean language. *Korean Language Research* 2019;52:81-109.
- Kim HS. Sense words as an expression of emotion. *Korean Language and Literature* 2005;140:163-195.
- Cho NS, Kil S, Park SB. Linguistic analysis and conceptualization of pain language. *Language and Linguistics* 2019;85:73-94.
- Yun DJ, Oh J, Kim BJ, Lim JG, Bae JS, Jeong D, et al. Development of Korean neuropathic pain questionnaire for neuropathic pain screening and grading: a pilot study. *J Korean Neurol Assoc* 2012;30:15-25.
- Sohn EH, Kim BJ. Clinical scale for neuropathic pain. *J Korean Neurol Assoc* 2021;39(Supplement 1):24-36.
- Jensen TS, Finnerup NB. Allodynia and hyperalgesia in neuropathic pain: clinical manifestations and mechanisms. *Lancet Neurol* 2014;13:924-935.
- Cho EB, Seok JM, Min JH, Suh BC, Park KJ, Kim BJ. ‘Sirim’ (cold) pain as a common symptom in Korean patients with clinically suspected small-fiber neuropathy. *J Clin Neurol* 2019;15:480-487.
- Moulin DE, Clark AJ, Gordon A, Lynch M, Morley-Forster PK, Nathan H, et al. Long-term outcome of the management of chronic neuropathic pain: a prospective observational study. *J Pain* 2015;16:852-861.
- Raja SN, Carr DB, Cohen M, Finnerup NB, Flor H, Gibson S, et al. The revised international association for the study of pain definition of pain: concepts, challenges, and compromises. *Pain* 2020;161:1976-1982.