Original Article

Check for updates

Traditional Korean Medicine Usage and Perception: a comparative study between the general population and the disabilities

Ji-Eun Han[1†], Jihye Kim[2†], Kyeong Han Kim[3], Ji-Yeon Lee[4]*, Soo-Hyun Sung[1]*

[1]Department of Policy Development, National Development Institute of Korean Medicine, Seoul, Republic of Korea
[2]Research Institute of Korean Medicine Policy, The Association of Korean Medicine, Seoul, Republic of Korea
[3]Department of Preventive Medicine, College of Korean Medicine, Woosuk University, Wanju, Republic of Korea
[4]National Agency for Development of Innovative Technologies in Korean Medicine, Seoul, Republic of Korea

*Corresponding Author
Soo-Hyun Sung
Department of Policy Development,
National Development Institute of
Korean Medicine, Seoul 04554,
Republic of Korea
Tel: +82-2-3393-4531
E-mail: koyote10010@nikom.or.kr

Ji-Yeon Lee
National Agency for Development of
Innovative technologies in Korean
Medicine, Seoul 04554 , Republic of
Korea
Tel: +82-2-973-6782
E-mail: jyounl@daum.net

[†]These authors contributed equally.

Objectives: This study is a comparative analysis of the satisfaction and recognition characteristics for traditional Korean medicine (TKM) in people with disabilities and the general population of Korea.

Methods: Here, 5,000 subjects were categorized into two groups based on a disability rating using the data from the 2017 National Survey for the Usage of Korean Medicine. The relationships among the sociodemographic characteristics, TKM usage status, recognition of TKM usage, and recognition of the effectiveness of the TKM treatment were analyzed based on the disease. The response reliability was verified using the chi-square test analysis method.

Results: Disabilities corresponded with low rates of high school or higher education (44%, 83.5%) and no jobs (56.9%, 33.5%), mostly the status of the low-income class with a monthly household income of < 1,500 USD (50.9%, 10.5%), poor health conditions (55.2%, 9.8%), high chronic disease prevalence rate (69.0%, 19.9%), high medical care rate (11.2%, 0.5%), and low commercial health insurance subscription rate (44%, 74.2%). Furthermore, people with disabilities visited TKM institutions more often (88.8%, 74.1%) with a high frequency TKM usage rate of ≥ 1-2 times a month (26.2%, 15.3%). They also reported that the cost of using the TKM was very high (14.7%, 8.8%) and that primarily the application of insurance benefits should be improved (52.6%, 47.5%). The treatment effectiveness for diseases was high for musculoskeletal disorders for both people with disabilities and the general population.

Conclusion: Preferential application of insurance benefits for musculoskeletal diseases must be extended to the TKM treatment as well, as people with disabilities have a high recognition for these conditions with TKM. It is difficult to perform randomized controlled trials on people with disability. Therefore, large-scale observational and cohort studies should be conducted. We hope this study will help establish a suitable TKM policy for people with disabilities.

Keywords: disabilities, traditional Korean medicine, perception, national survey

INTRODUCTION

An increase in the global competition for the provision of services has created a rigorous situation that is influencing the inhabited businesses, particularly medical services. Therefore, health-care providers have begun to emphasize on delivering superior health-care services owing to growing competition among hospitals, thereby allowing patients to make the best choice while selecting hospitals [1]. Hence, improved patient care has become a priority for all health-care service providers

with the optimum objective of achieving a high degree of patient satisfaction [2].

Patient satisfaction is one of the key factors that determines the success of either a government policy or a successful business. Patient satisfaction can only be achieved and sustained by delivering exquisite service quality every time [3]. Perception has also emerged as a prominent determinant of the utilization of health services [4]. Thus, understanding patient satisfaction and perception may have key roles in improving medical services and developing appropriate policies [5].

Disabilities are associated with poor health outcomes as they increase the risk of developing secondary conditions, secondary functional losses, and early onset of chronic diseases [6]. Furthermore, patients with disability may encounter various barriers while attempting to access health-care services, which may further lead to unmet health-care needs [7]. In addition, such patients may not receive the same quality of medical services as the general population receives because of factors such as insufficient or no insurance coverage, high patient costs, lack of transportation, various physical barriers to medical equipment, and clinicians' discouraging attitudes, along with limitations related to personal mobility and communication [8, 9].

Data obtained from the 2012 Child Complementary and Alternative Medicine Supplement of the National Health Interview Survey showed that a higher number of children with developmental disabilities and comorbid chronic medical conditions used complementary and alternative medicine (CAM) treatments compared to their typically developing peers (23% vs. 18%) [10]. According to a cross-sectional study on 390 students with developmental disabilities, 77.2% of mothers reported using at least one CAM treatment [11]. A study by the Korea Health Panel Survey showed that the rate of traditional Korean medicine (TKM) clinic usage by patients with disability increased from 15.1% in 2008 to 17.6% in 2015 [12].

Brown et al. [13] reviewed 22 papers on CAM treatment of children with developmental disabilities and organized the CAM treatment type for six specific diseases. Lee et al. [7] reported that patients with disabilities experience more barriers in accessing medical services despite needing such services more frequently than the general population in South Korea. However, no study has yet compared the TKM usage by patients with disabilities with that by the general population.

This cross-sectional study is a comparative analysis of TKM characteristics that people with disabilities find satisfactory and those that the general population identifies with in Korea. The study results may help identify the characteristics of patients with disability using TKM in comparison with those of the general population and may become the basis for establishing TKM policies that are more friendly to people with disability. In addition, we hope that it can be used as a political reference for countries using traditional medicine or CAM.

MATERIALS AND METHODS

1. Data sources

The data analyzed in this study were collected from the 2017 National Survey for the Use of Korean Medicine (State-Approved Statistics Approval No. 117087) [14]. A questionnaire was given to the study participants to gather basic data needed for establishing the TKM policy. We aimed to find out the status of TKM service usage through the survey and analyze the TKM usage experience of and recognition by 6,914 people, including 5,000 people identified as general public, 1,010 outpatients, and 904 inpatients from various TKM institutions around Korea. We have already explained the National Survey for the Usage of Korean Medicine in a previous study [5].

2. Study sample

The data analyzed in this study were obtained from a survey of 5,000 people identified as the general public during the 2017 National Survey for the Usage of Korean Medicine. People responding "① Yes" to the question—"V. Health Status 15. Do you get the disability rating? ① Yes ② No"—were categorized as people with disabilities (n = 116) and those responding with "② No" were grouped into the general population (n = 4,884) groups. In this study, the "disability rating" refers to how the disability is defined in the Act on Welfare of Persons with Disabilities [15].

3. Analysis item

This study analyzed the sociodemographic characteristics, TKM usage status, TKM usage recognition, and relation of recognition with the effectiveness of TKM treatment by disease for the two groups categorized according to the existence of disabilities (group with disability and general population group) in the 2017 National Survey for the Usage of Korean Medicine. Sociodemographic characteristics considered included gender,

age group, residence area, marital status, academic ability, job status, household income, health status, existence of chronic disease, medical security type, and existence of a commercial health insurance subscription. For the TKM usage status, the variables were the experience in using TKM, the reason for selecting TKM, and satisfaction with TKM. TKM usage recognition refers to the participants' response on the TKM usage cost, whether the disease requires preferential application TKM, whether they received any health insurance benefit, safety of medical herbs, future of TKM, whether they intended to use TKM in the future, and whether they would recommend TKM to others. Furthermore, the effectiveness of TKM by disease was considered for the following 16 diseases: disc-related conditions (e.g., herniation of intervertebral disc or spinal stenosis), osteoarthritis, frozen shoulder and shoulder pain, back pain, sprain, facial nerve paralysis, stroke, digestive diseases, common cold and rhinitis, skin disorder, genitourinary disease, hypertension, diabetes mellitus, dementia, cancer-related pain, and infertility.

4. Statistical analysis

The chi-square test was applied using IBM Statistical Package for Social Sciences (SPSS) for Windows, version 25 (IBM Corp., Armonk, NY, USA). The χ^2-test is one of the analysis methods frequently used in categorical data analysis and is often applied in cross-tabulation analysis comparing rates among different groups.

RESULTS

1. Sociodemographic characteristics

The characteristics of the participants are presented in Table 1. Among the 5,000 participants belonging to the general public, 116 (2.3%) received the disability rating. Of these 116, 69 (59.5%) were men and 47 (40.5%) were women. In addition, persons with ≥ 60 years of age comprise approximately 60% of those with the disability rating. Hence, it is clear that the proportion of aged persons was much higher among the people with disabilities than that in the general population. The metropolitan area was ranked as the first place of residence regardless of the existence of disability. Among the people with disabilities, 9 (7.8%) were unmarried, while 107 (92.2%) were married. As expected, the general population generally was more highly educated. In contrast, majority of the people with disabilities

marked themselves as only primary or lower school graduates, followed by high school graduates. In addition, among the people with disabilities, only 50 persons (43.1%) had a job, while the remaining 66 (56.9%) identified themselves as unemployed. In contrast, a higher proportion of the general population was employed. It was also noted that more than half of the people with disabilities had a household income of < 1,500 United States dollar (USD), which is the lowest range. In contrast, 28.5% and 27.4% of the general population group, respectively, had a household income of 3,000-4,500 USD and 4,500-6,000 USD. Hence, it is clear that the annual household income of the general population group is higher than that of the group with disabilities.

To the question on the health status of a person with the 5-point scale, approximately 40% the people with disabilities answered as "A little bad," while 25.9% answered "Average." In contrast, almost 50% of the general population answered "A little good," followed by "Average." Approximately 70% of the people with disabilities said that they are suffering from or have suffered from a chronic disease, while approximately 80% of the general population answered "No" to this question, which is a big difference between the two groups. In addition, 50% and 38.8% of the people with disabilities had local and workplace health insurances, respectively, while 34% and 65.5% of the general population, respectively, had such insurances. Another noticeable difference between the two groups was that 11.2% of the people with disabilities had medical care, while only 0.5% of the general population had it. Finally, non-subscription to commercial health insurance was greater than subscription among the people with disabilities, while it was the opposite with the general population.

2. TKM usage status

The TKM usage status is presented in Table 2. Note that 88.8% of the people with disabilities and 74.1% of the general population had experience with at least one TKM institution. In addition, people with disabilities had a higher frequency of the usual TKM usage than the general population (25.2% and 15.3%, respectively). The categories "Reason for not having a TKM usage experience," "Reason for selecting TKM," and "Overall TKM satisfaction" had no statistical significance. Importantly, 15.4% of the people with disabilities answered "Expensive fee" as the reason for not having a TKM usage experience. "Good treatment effect" was chosen as reason for using

Table 1. Demographic characteristics of the study population   (Unit: Person, %)

	Category	Disabilities	General population	Total	χ^2 (p)
Total		116 (2.3)	4,884 (97.7)	5,000 (100.0)	
Gender	Male	69 (59.5)	2,398 (49.1)	2,467 (49.3)	4.888*
	Female	47 (40.5)	2,486 (50.9)	2,533 (50.7)	(0.027)
Age	19-29	1 (0.9)	870 (17.8)	871 (17.4)	91.163**
	30s	5 (4.3)	855 (17.5)	860 (17.2)	(0.000)
	40s	17 (14.7)	1,010 (20.7)	1,027 (20.5)	
	50s	23 (19.8)	966 (19.8)	989 (19.8)	
	60 or older	70 (60.3)	1,183 (24.2)	1,253 (25.1)	
Residence	Metropolitan	50 (43.1)	2,030 (41.6)	2,080 (41.6)	8.057*
	Chungcheong	26 (22.4)	734 (15.0)	760 (15.2)	(0.045)
	Gyeongsang	21 (18.1)	1,359 (27.8)	1,380 (27.6)	
	Jeolla	19 (16.4)	761 (15.6)	780 (15.6)	
Marriage	Unmarried	9 (7.8)	1,069 (21.9)	1,078 (21.6)	13.376**
	Married (bereaved, divorced, and common-law included)	107 (92.2)	3,815 (78.1)	3,922 (78.4)	(0.000)
Academic background	Primary or lower school graduate	44 (37.9)	435 (8.9)	479 (9.6)	141.477**
	Middle school graduate	21 (18.1)	368 (7.5)	389 (7.8)	(0.000)
	High school graduate	34 (29.3)	1,930 (39.5)	1,964 (39.3)	
	University or higher school graduate	17 (14.7)	2,151 (44.0)	2,168 (43.4)	
Job	Yes	50 (43.1)	3,248 (66.5)	3,298 (66.0)	27.631**
	No	66 (56.9)	1,636 (33.5)	1,702 (34.0)	(0.000)
Household income	Less than 1,500 USD	59 (50.9)	514 (10.5)	573 (11.5)	192.479**
	1,500 USD less than 3,000 USD	26 (22.4)	963 (19.7)	989 (19.8)	(0.000)
	3,000 USD less than 4,500 USD	16 (13.8)	1,393 (28.5)	1,409 (28.2)	
	4,500 USD less than 6,000 USD	9 (7.8)	1,336 (27.4)	1,345 (26.9)	
	No less than 6,000 USD	6 (5.2)	678 (13.9)	684 (13.7)	
Health status	Very good	4 (3.4)	889 (18.2)	893 (17.9)	315.179**
	A little good	18 (15.5)	2,329 (47.7)	2,409 (46.9)	(0.000)
	Average	30 (25.9)	1,187 (24.3)	1,217 (24.3)	
	A little bad	46 (39.7)	424 (8.7)	470 (9.4)	
	Very bad	18 (15.5)	55 (1.1)	73 (1.5)	
Chronic diseases	Yes	80 (69.0)	970 (19.9)	1,050 (21.0)	164.689**
	No	36 (31.0)	3,914 (80.1)	3,950 (79.0)	(0.000)
Medical security type	Health insurance (district insurance)	58 (50.0)	1,659 (34.0)	1,717 (34.3)	196.783**
	Health insurance (workplace insurance)	45 (38.8)	3,201 (65.5)	3,246 (64.9)	(0.000)
	Medical care	13 (11.2)	24 (0.5)	37 (0.7)	
	Miscellaneous	0 (0.0)	0 (0.0)	0 (0.0)	
Commercial insurance	Subscribed	51 (44.0)	3,625 (74.2)	3,676 (73.5)	53.281**
	Unsubscribed	65 (56.0)	1,259 (25.8)	1,324 (26.5)	(0.000)

Note: *p < 0.05, **p < 0.001.
USD, United State dollar.

Table 2. TKM usage status
(Unit: Person, %)

	Category	Group with disabilities	General population	Total	χ^2 (p)
Experience of using TKM	Yes	103 (88.8)	3,621 (74.1)	3,724 (74.5)	12.800**
	No	13 (11.2)	1,263 (25.9)	1,276 (25.5)	(0.000)
Reason for not having experience using TKM	Low perceptions of TKM	1 (7.7)	134 (10.6)	135 (10.6)	4.116
	Expensive fee	2 (15.4)	59 (4.7)	61 (4.8)	(0.533)
	Concerns on safety of herbal medicines	1 (7.7)	45 (3.6)	46 (3.6)	
	Burden of TKM treatments	1 (7.7)	149 (11.8)	150 (11.8)	
	Low needs of TKM	8 (61.5)	874 (69.2)	882 (69.1)	
	No idea	0 (0.0)	2 (0.2)	2 (0.2)	
Reason for selecting TKM	Good treatment effect	58 (58.6)	2,120 (58.5)	2,178 (58.5)	11.969
	No burden of surgery and examination	4 (3.9)	213 (5.9)	217 (5.8)	(0.215)
	Low side effects	10 (9.7)	507 (14.0)	517 (13.9)	
	Low cost	0 (0.0)	31 (0.9)	31 (0.8)	
	Detail explanation	0 (0.0)	56 (1.5)	56 (1.5)	
	Specialized TKM treatment	9 (8.7)	243 (6.7)	252 (6.8)	
	Close distance	7 (6.8)	149 (4.1)	156 (4.2)	
	Good facilities and environment	0 (0.0)	3 (0.1)	3 (0.1)	
	Recommendation by surrounding people	15 (14.6)	296 (8.2)	311 (8.4)	
	No idea	0 (0.0)	3 (0.1)	3 (0.1)	
Overall TKM satisfaction	Very satisfied	6 (5.8)	315 (8.7)	321 (8.6)	6.423
	A little satisfied	66 (64.1)	2,463 (68.0)	2,529 (67.9)	(0.170)
	Average	26 (25.2)	771 (21.3)	797 (21.4)	
	A little dissatisfied	4 (3.9)	63 (1.7)	67 (1.8)	
	Dissatisfied	1 (1.0)	9 (0.2)	10 (0.3)	
Frequency for using TKM	3 or more times a week	3 (2.9)	40 (1.1)	43 (1.2)	16.105*
	1-2 times a week	9 (8.7)	153 (4.2)	162 (4.4)	(0.007)
	1-2 times a month	15 (14.6)	362 (10.0)	377 (10.1)	
	3-4 times a year	19 (18.4)	757 (20.9)	776 (20.8)	
	1-2 times a year	22 (21.4)	1,264 (34.9)	1,286 (34.5)	
	Not used TKM	35 (34.0)	1,045 (28.9)	1,080 (29.0)	

Note: *p < 0.01, **p < 0.001.
TKM, Traditional Korean medicine.

TKM by the highest proportion of both people with disabilities and those of general population. In addition, 14.6% of the people with disabilities selected TKM on the "Recommendation by surrounding people." The overall TKM satisfaction rates were similar in both the groups.

3. Perception on TKM usage

The perception on TKM usage is presented in Table 3. Notably, 17% of the people with disabilities said that TKM is "Very Expensive," while only 8.8% of the general population thought so. This also explains why 52.6% of the people with disabilities wanted an "Expansion of the Application of Insurance Benefit" that needs to be improved first in the TKM field, while 47.6% of the general population thought so. The other items "Disease requiring preferential application when expanding the health insurance benefit on TKM," "TKM treatment method requiring preferential application when expanding the health insurance benefit on TKM," "Thought about the safety of medical herbs," "Intention on TKM usage when requiring medical service in

Table 3. Perception on TKM usage

(Unit: Person, %)

	Category	People with disabilities	General population	Total	χ^2 (p)
Perceptions on the cost of using TKM	Very expensive	17 (14.7)	430 (8.8)	447 (8.9)	20.099** (0.000)
	A little expensive	39 (33.6)	2,183 (44.7)	2,222 (44.4)	
	Average	50 (43.1)	1,882 (38.5)	1,932 (38.6)	
	Little inexpensive	7 (6.0)	369 (7.6)	376 (7.5)	
	Inexpensive	3 (2.6)	20 (0.4)	23 (0.5)	
Diseases requiring priority when expanding health insurance for TKM	Four major diseases (cancer, cardiovascular disease, and rare incurable disease)	39 (33.6)	1,374 (28.1)	1,413 (28.3)	8.779 (0.722)
	Musculoskeletal diseases	40 (34.5)	2,014 (41.2)	2,054 (41.1)	
	Neurologic diseases	19 (16.4)	697 (14.3)	716 (14.3)	
	Hypertension	4 (3.4)	99 (2.0)	103 (2.1)	
	Endocrine diseases	3 (2.6)	138 (2.8)	141 (2.8)	
	Digestive disease	3 (2.6)	167 (3.4)	170 (3.4)	
	Respiratory disease	6 (5.2)	149 (3.1)	155 (3.1)	
	Mental disease	0 (0.0)	60 (1.2)	60 (1.2)	
	Gynecological disease	1 (0.9)	72 (1.5)	73 (1.5)	
	Skin disease	1 (0.9)	79 (1.6)	80 (1.6)	
	Genitourinary disease	0 (0.0)	25 (0.5)	25 (0.5)	
	Eye and ear disease	0 (0.0)	9 (0.2)	9 (0.2)	
	No idea	0 (0.0)	1 (0.0)	1 (0.0)	
Interventions requiring priority when expanding health insurance for TKM	Herbal medicine (except decoction)	20 (17.2)	917 (18.8)	937 (18.7)	5.631 (0.230)
	Decoction type of herbal medicine	69 (59.5)	2,684 (55.0)	2,753 (55.1)	
	Physiotherapy	14 (12.1)	470 (9.6)	484 (9.7)	
	Chuna therapy	4 (3.4)	458 (7.4)	462 (9.2)	
	Pharmacopuncture	9 (7.8)	355 (7.3)	364 (7.3)	
Perceptions on the safety of herbs	Very safe	3 (2.6)	134 (2.7)	137 (2.7)	4.551 (0.337)
	A little safe	43 (37.1)	1,828 (37.4)	1,871 (37.4)	
	Average	42 (36.2)	1,995 (40.8)	2,037 (40.7)	
	Little unsafe	22 (19.0)	810 (16.6)	832 (16.6)	
	Unsafe	6 (5.2)	117 (2.4)	123 (2.5)	
Priority need to be improved in TKM fields	Expansion of health insurance benefit	61 (52.6)	2,320 (47.5)	2,381 (47.6)	14.772* (0.022)
	Collaborative treatment of conventional and TKM	14 (12.1)	687 (14.1)	701 (14.0)	
	Development of various types of herbal medicines	15 (12.9)	362 (7.4)	377 (7.5)	
	Strengthening the safety of herbs	17 (14.7)	937 (19.2)	954 (19.1)	
	Providing and promoting accurate information on TKM	6 (5.2)	359 (7.4)	365 (7.3)	
	Standardization of TKM treatment	2 (1.7)	214 (4.4)	216 (4.3)	
	No idea	1 (0.9)	5 (0.1)	6 (0.1)	
Intention to use TKM	Yes	98 (84.5)	4,107 (84.1)	4,205 (84.1)	0.013 (0.909)
	No	18 (15.5)	777 (15.9)	795 (15.9)	
Intention to recommend TKM	Yes	73 (62.9)	3,111 (63.7)	3,184 (63.7)	0.029 (0.865)
	No	43 (37.1)	1,773 (36.3)	1,816 (36.3)	

Note: *p < 0.05, **p < 0.001.

TKM, Traditional Korean medicine.

the future," and "Intention on recommending TKM in the future" had no statistical significance. However, for the "Disease requiring preferential application when expanding the health insurance benefit on TKM," a musculoskeletal disease was selected by a majority of people in both groups (34.5% and 41.2%, respectively), followed by four severe diseases (33.6% and 28.1%, respectively) and a nerve disorder (16.4% and 14.3%, respectively). For the "TKM treatment method requiring preferential application when expanding the health insurance benefit on TKM," decoction was selected by a majority of the people in both groups (59% and 55%, respectively). For the "Thought on the safety of medical herbs," 39.7% of the people with disabilities considered them "Very safe," while 40.1% of the general population considered them "A little safe." Additionally, 24.2% of the people with disabilities considered them "A little unsafe" and 19.0% of the general population considered them as "Very unsafe." The "Intention on TKM usage when using medical service in the future" was very high at 84.5% for people with disabilities and 84.1% for the general population. The "Intention on recommending TKM in the future" was also high at 62.9% for people with disabilities and 63.7% for the general population.

4. Recognition on the effectiveness of TKM treatment by disease

The recognition on the effectiveness of TKM treatment by disease is presented in Table 4. The musculoskeletal diseases (disk disease, frozen shoulder, ear reflexology, backache, and sprain) and atopic dermatitis (a skin disease) were statistically significant. In the case of the disk disease, among the people with disabilities, 14.7% considered TKM as "Very effective" and 44.8% as "A bit effective," making the proportion of people in this group who consider TKM "Effective" as 59.5%, much higher than those (26.8%) who consider it as "Ineffective." In contrast, 72.9% of the general population considered TKM as "Effective," while only 17.7% considered it "Ineffective."

In the case of the frozen shoulder and ear reflexology, 24.1% of people with disabilities think TKM to be "Very effective," while 45.7% consider it "A bit effective." Thus, 69.8% of the people with disabilities consider TKM to be "Effective," while only 15.5% consider it "Ineffective." Notably, 81.4% of the general population consider TKM as "Effective," while only 12.4% think it as "Ineffective." Thus, a higher proportion of the general population consider TKM as "Effective" than the people with

disabilities (69.8%).

For backache, 26.7% of people with disabilities consider TKM as "Very effective," while 47.4% consider it "A bit effective." Hence, the proportion of people with disabilities that view TKM as "Effective" is higher (74.1%) than those (14.7%) who consider it as "Ineffective." In contrast, 85.2% of the general population consider TKM as "Effective," while only 10.4% consider it as "Ineffective."

For sprain, 35.3% of people with disabilities believe TKM to be "Very effective" and 39.7% of such people consider it as "A bit effective." Thus, the proportion of such people who consider TKM as "Effective" is higher (75.0%) than those (13.8%) who consider it as "Ineffective." In the general population, 84.5% consider TKM as "Effective," while only 10.3% consider it as "Ineffective." Hence, the "Effective" response was much higher in the general population (75.0%) than in the people with disabilities.

In the case of musculoskeletal diseases, the proportion of people with disabilities who considered TKM as "Very effective" was in the following order: sprain (35.3%), backache (26.7%), frozen shoulder and ear reflexology (24.1%), and disk disease (14.7%). The total number of people who considered TKM as "Effective" was in the following order: sprain (75%), backache (74.1%), frozen shoulder and ear reflexology (69.8%), and disk disease (59.5%). The general population also showed the same order for "Very Effective." However, the number of people in the general population who consider TKM "Effective" for backache (85.2%) was the highest, followed by those who consider it "Effective" for sprain (84.5%), frozen shoulder and ear reflexology (8.4%), and disk disease (72.9%).

For atopic dermatitis, only 3 persons (2.6%) with disabilities considered TKM as "Very effective," while 27.6% and 25.9% of people with disabilities considered it as "A little effective" and "Not very effective," respectively. In addition, 12.1% of people with disabilities considered it as "Ineffective," while 31.9% chose to select "Unknown"—the highest number. Similarly, only 4.1% of the general population rated TKM as "Very effective," while 31.6% and 32.1% considered it as "A little effective" and "Not very effective," respectively, and 11.8% rated it as "Ineffective." "Unknown" was selected by 20.4% of the general population, a considerably high number.

Arthritis, facial paralysis, cerebral palsy, gastrointestinal disease, cold and rhinitis, genitourinary disease, high blood pressure, diabetes, dementia, cancer pain, and infertility were not statistically significant. However, the total numbers of responses

Table 4. Perception of TKM effectiveness for each disease

(Unit: Person, %)

Category		People with disabilities	General population	Total	χ^2 (p)
Disc-related disease (herniation of intervertebral disc, spinal stenosis)	Very effective	17 (14.7)	871 (17.8)	888 (17.8)	13.206* (0.010)
	A little effective	52 (44.8)	2,692 (55.1)	2,744 (54.9)	
	Little effective	25 (21.6)	765 (15.7)	790 (15.8)	
	Ineffective	6 (5.2)	97 (2.0)	103 (2.1)	
	No idea	16 (13.8)	459 (9.4)	475 (9.5)	
Osteoarthritis	Very effective	19 (16.4)	951 (19.5)	970 (19.4)	6.754 (0.149)
	A little effective	54 (46.6)	2,595 (53.1)	2,649 (53.0)	
	Little effective	24 (20.7)	850 (17.4)	874 (17.5)	
	Ineffective	4 (3.4)	99 (2.0)	103 (2.1)	
	No idea	15 (12.9)	389 (8.0)	404 (8.1)	
Frozen shoulder · shoulder pain	Very effective	28 (24.1)	1,432 (29.3)	1,460 (29.2)	17.098** (0.002)
	A little effective	53 (45.7)	2,545 (52.1)	2,598 (52.0)	
	Little effective	14 (12.1)	526 (10.8)	540 (10.8)	
	Ineffective	4 (3.4)	76 (1.6)	80 (1.6)	
	No idea	17 (14.7)	305 (6.2)	322 (6.4)	
Back pain	Very effective	31 (26.7)	1,672 (34.2)	1,703 (34.1)	15.828** (0.003)
	A little effective	55 (47.4)	2,490 (51.0)	2,545 (50.9)	
	Little effective	14 (12.1)	438 (9.0)	452 (9.0)	
	Ineffective	3 (2.6)	67 (1.4)	70 (1.4)	
	No idea	13 (11.2)	217 (4.4)	230 (4.6)	
Sprain	Very effective	41 (35.3)	1,803 (36.9)	1,844 (36.9)	11.457* (0.022)
	A little effective	46 (39.7)	2,324 (47.6)	2,370 (47.4)	
	Little effective	13 (11.2)	443 (9.1)	456 (9.1)	
	Ineffective	3 (2.6)	58 (1.2)	61 (1.2)	
	No idea	13 (11.2)	256 (5.2)	269 (5.4)	
Facial nerve paralysis	Very effective	34 (29.3)	1,132 (23.2)	1,166 (23.3)	7.422 (0.115)
	A little effective	49 (42.2)	2,388 (48.9)	2,437 (48.7)	
	Little effective	14 (12.1)	760 (15.6)	774 (15.5)	
	Ineffective	1 (0.9)	99 (2.0)	100 (2.0)	
	No idea	18 (15.5)	505 (10.3)	523 (10.5)	
Stroke	Very effective	214 (18.1)	811 (16.6)	832 (16.6)	3.487 (0.480)
	A little effective	58 (50.0)	2,286 (46.8)	2,344 (46.9)	
	Little effective	15 (12.9)	968 (19.8)	983 (19.7)	
	Ineffective	5 (4.3)	198 (4.1)	203 (4.1)	
	No idea	17 (14.7)	621 (12.7)	638 (12.8)	
Digestive disease	Very effective	8 (6.9)	468 (9.6)	476 (9.5)	7.953 (0.093)
	A little effective	46 (39.7)	2,014 (41.2)	2,060 (41.2)	
	Little effective	26 (22.4)	1,300 (26.6)	1,326 (26.5)	
	Ineffective	8 (6.9)	369 (7.6)	377 (7.5)	
	No idea	28 (24.1)	733 (15.0)	761 (15.2)	

Table 4. Continued

Category		People with disabilities	General population	Total	χ^2 (p)
Common cold and rhinitis	Very effective	7 (6.0)	374 (7.7)	381 (7.6)	8.124 (0.087)
	A little effective	38 (32.8)	1,822 (37.3)	1,860 (37.2)	
	Little effective	29 (25.0)	1,463 (30.0)	1,492 (29.8)	
	Ineffective	13 (11.2)	441 (9.0)	454 (9.1)	
	No idea	29 (25.0)	784 (16.1)	813 (16.3)	
Skin disorder	Very effective	3 (2.6)	200 (4.1)	203 (4.1)	9.872* (0.043)
	A little effective	32 (27.6)	1,545 (31.6)	1,577 (31.5)	
	Little effective	30 (25.9)	1,568 (32.1)	1,598 (32.0)	
	Ineffective	14 (12.1)	575 (11.8)	589 (11.8)	
	No idea	37 (31.9)	996 (20.4)	1,033 (20.7)	
Genitourinary disease	Very effective	1 (0.9)	107 (2.2)	108 (2.2)	8.534 (0.074)
	A little effective	25 (21.6)	1,224 (25.1)	1,249 (25.0)	
	Little effective	34 (29.3)	1,811 (37.1)	1,845 (36.9)	
	Ineffective	18 (15.5)	602 (12.3)	620 (12.4)	
	No idea	38 (32.8)	1,140 (23.3)	1,178 (23.6)	
Hypertension	Very effective	4 (3.4)	202 (4.1)	206 (4.1)	8.271 (0.082)
	A little effective	25 (21.6)	1,250 (25.6)	1,275 (25.5)	
	Little effective	35 (30.2)	1,816 (37.2)	1,851 (37.0)	
	Ineffective	17 (14.7)	635 (13.0)	652 (13.0)	
	No idea	35 (30.2)	981 (20.1)	1,016 (20.3)	
Diabetes mellitus	Very effective	4 (3.4)	139 (2.8)	143 (2.9)	8.728 (0.068)
	A little effective	21 (18.1)	1,047 (21.4)	1,068 (21.4)	
	Little effective	36 (31.0)	1,878 (38.5)	1,914 (38.3)	
	Ineffective	17 (14.7)	760 (15.6)	777 (15.5)	
	No idea	38 (32.8)	1,060 (21.7)	1,098 (22.0)	
Dementia	Very effective	6 (5.2)	173 (3.5)	179 (3.6)	7.858 (0.097)
	A little effective	17 (14.7)	979 (20.0)	996 (19.9)	
	Little effective	34 (29.3)	1,575 (32.2)	1,609 (32.2)	
	Ineffective	19 (16.4)	956 (19.6)	975 (19.5)	
	No idea	40 (34.5)	1,201 (24.6)	1,241 (24.8)	
Cancer-related pain	Very effective	3 (2.6)	149 (3.1)	152 (3.0)	5.591 (0.232)
	A little effective	14 (12.1)	877 (18.0)	891 (17.8)	
	Little effective	34 (29.3)	1,553 (31.8)	1,587 (31.7)	
	Ineffective	26 (22.4)	1,069 (21.9)	1,095 (21.9)	
	No idea	39 (33.6)	1,236 (25.3)	1,275 (25.5)	
Infertility	Very effective	5 (4.3)	164 (3.4)	169 (3.4)	5.229 (0.265)
	A little effective	22 (19.0)	1,255 (25.7)	1,277 (25.5)	
	Little effective	34 (29.3)	1,548 (31.7)	1,582 (31.6)	
	Ineffective	19 (16.4)	767 (15.7)	786 (15.7)	
	No idea	36 (31.0)	1,150 (23.5)	1,186 (23.7)	

Note: *p < .05, **p < 0.01.
TKM, Traditional Korean medicine.

for "Effective" (comprising "Very effective" and "A bit effective") for arthritis, facial paralysis, and cerebral palsy were considerably high at 63%, 71.5%, and 68.1%, respectively.

DISCUSSION

This study performed a survey and analyzed the results to check the difference in the recognition of TKM usage status and situation and the TKM treatment effect between the group with disability ratings and the general population group. People with disability belong to the vulnerable class, along with the aged people, mothers, and infants. Various national health care and welfare services have been designed to support the vulnerable class [15-17]. Additionally, the rate of fertility has decreased worldwide, leading to an increase in the population of elderly; as a result, the state is actively involved in an attempt to increase the rate of fertility and in the care of aged citizens, mothers, and infants [18]. However, this has resulted in a low involvement of the state in the health and welfare of people with disabilities. In an attempt to overcome this disadvantage, we hope that the present study will provide the basic data that may help subsequent studies and in promoting the national TKM policy.

An analysis of sociodemographic characteristics (Table 1) showed that 60% of people with disabilities were aged 60 years or more. This number is exceptionally high compared to that in the general population group. Note that there were only 116 respondents with disabilities, a very small number compared with 4,884 people in the general population group. Therefore, it is necessary to analyze the results after correcting for age and collecting more data using samples such as the health insurance request material. Regarding health status and the existence of a chronic disease, a higher proportion of people with disabilities gave a poor health status response than that given by the general population. Additionally, the proportion of people with a chronic disease was higher among the people with disabilities, while they generally had a lower academic ability, higher unemployment rate, and lower household income compared with those the general population group. As a result, the rate of medical security was higher and the subscription rate for commercial health insurance was lower in the group with disabilities than that in the general population.

The TKM usage frequency was slightly higher among the people with disabilities than the general population (88.8% and 74.1%, respectively) (Table 2). "Expensive fee" was the reason cited by those that did not use TKM. The results shown

in Tables 1 and 2 suggest that people with disabilities have a poor health status, with a relatively high TKM institution usage experience, usage frequency, and high satisfaction. However, because they also have low household income, they are more burdened by the TKM fee compared to the general population.

This result can also be verified from the opinions on TKM usage (Table 3). To the question "Thought of disabilities on the TKM usage cost," a very high number of people with disabilities responded with "Very expensive TKM cost." They also believed that the TKM field must be improved and insurance benefits must be expanded to include TKM. No significant difference was seen between the group with disabilities and the general population. However, the responses to the disease requiring preferential application when expanding health insurance benefit was in the following order: musculoskeletal diseases, four severe diseases, and nerve disorders commonly seen in both the group with disabilities and the general population. Decoction received the highest response among the various TKM treatments requiring preferential application. Hence, health insurance benefits should be expanded and should cover the TKM cost as well. In addition to the current indicators such as facial paralysis, menstrual pain, and cerebrovascular disease, the health insurance pilot program for medicinal herbs should also include musculoskeletal diseases [19].

Regarding the recognition of treatment by disease (Table 4), the response rates by people with disabilities and the general population on musculoskeletal diseases were high. However, the total response rate of "Effective" for musculoskeletal diseases was slightly lower in the general population than that among the people with disabilities. This result agrees with the fact that people with disabilities showed a reduced preference for musculoskeletal diseases in the "Disease requiring preferential application when expanding health insurance benefits for TKM items" (Table 3). Since patients with disability had a higher rate of existence of a chronic disease than the general population, treatment experience and requests for other chronic diseases, including cancer, heart, and brain diseases, and nerve disorders, in addition to musculoskeletal diseases, are more frequent among the former. Hence, musculoskeletal disease is the first priority target disease for which health insurance benefits are expanded. In addition, support should be extended for other chronic diseases as well. No significant difference was observed for arthritis, facial paralysis, and cerebral palsy, although the response rate of effectiveness was high. As people with disabilities hope to expand their health insurance benefit for these four se-

vere diseases, similarly to musculoskeletal disorders, insurance coverage should be extended to these major diseases as well. It is not easy to conduct randomized controlled trials on people with disability to find high levels of evidence effects. Therefore, large-scale observational and cohort studies that can be the basis for similar effects are required.

This study can provide useful information about the TKM usage status, satisfaction, and health insurance benefit expansion requests for people with disabilities. People with disabilities face many restrictions in daily life, resulting in serious vulnerability in health management. In addition, they often have limited mobility, resulting in fewer opportunities for disease treatment and prevention compared with the general population. Hence, it is necessary to provide national systematic support to people with disabilities [20, 21]. According to the Act on Guarantee of Right to Health and Access to Medical Services for Persons with Disabilities (Act No. 13661) enacted in 2015, people with disability have the right to the same accessibility as that of the general population in terms of access to health management and health and medical services, and the national and local governments are responsible for establishing a comprehensive health and management plan for treating/managing disabilities and for implementing the family doctor system for people with disability [22, 23]. Accordingly, the Korean government has established a community program called the "Pilot Family Doctor Program for the Health of Disabilities" for two years since 2015, and the house-call satisfaction of individuals with disability has been reported to be very high [24]. Furthermore, according to the "Team-based primary care program" implemented by the "Korea Health Welfare Social Cooperative Federation" between 2015 and 2017, patients with disability reported high satisfaction with the TKM treatment and a decrease in dissatisfaction with health management [25]. Hence, the TKM health insurance needs to be promptly extended to people with disabilities. It is also necessary to establish a TKM policy for managing the health of people with disabilities, including schemes such as the "Family doctor of TKM for the health of people with disabilities" by considering the high number of requests for TKM made by the people with disabilities in this study and past studies.

This study has certain limitations as well. First, only 116 of 5,000 people received disability ratings; therefore, it was difficult to consider that the survey results represented the TKM usage status and recognition of disabilities in the whole of Korea. It is necessary to decide the minimum number of survey subjects while selecting national survey subjects in the future or performing a separate survey for disabilities. Second, only two groups—people with disabilities and the general population—were analyzed as study subjects. As a result, the TKM usage status and satisfaction based on disability rating and a moderate degree of disability could not be determined. Therefore, this topic should be investigated in a future study to help establish the TKM health policy through more specific disability ratings.

Nevertheless, people with disability, a socially vulnerable group, has very poor access to health-care delivery systems based on Western medicine. Therefore, activation of the TKM policy for people with disability significant because it can further expand their accessibility to health care.

CONCLUSION

This study showed that the TKM usage experience and frequency in case of patients with disability were greater than those of the general population. Furthermore, more than half of the respondents (52.6%) believed that applying insurance benefits to TKM treatment should be prioritized. It is particularly necessary to review the preferential application of insurance benefits to musculoskeletal diseases (disc-related disease, osteoarthritis, frozen shoulder and shoulder pain, back pain, and sprains) with a high recognition of the treatment effect. This study could be used as a political evidential material for establishing a more suitable TKM policy for people with disability.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this paper.

FUNDING

ETHICAL STATEMENT

Ethics approval was not required for this study.

DATA AVAILABILITY

The national survey for usage of traditional Korean medicine data used in this study can be obtained at https://www.koms.or.kr/page/data-poll/data-guide.do?menu_no=17 after registration.

ORCID

Ji-Eun Han, https://orcid.org/0000-0001-9014-0354
Jihye Kim, https://orcid.org/0000-0002-9027-5299
Kyeong Han Kim, https://orcid.org/0000-0003-4868-9145
Ji-Yeon Lee, https://orcid.org/0000-0002-2140-2581
Soo-Hyun Sung, https://orcid.org/0000-0001-7606-0147

REFERENCES

1. Bleustein C, Rothschild DB, Valen A, Valatis E, Schweitzer L, Jones R. Wait times, patient satisfaction scores, and the perception of care. Am J Manag Care. 2014;20(5):393-400.

2. Lee MA, Yom YH. A comparative study of patients' and nurses' perceptions of the quality of nursing services, satisfaction and intent to revisit the hospital: a questionnaire survey. Int J Nurs Stud. 2007;44(4):545-55.

3. Manzoor F, Wei L, Hussain A, Asif M, Shah SIA. Patient satisfaction with health care services; an application of physician's behavior as a moderator. Int J Environ Res Public Health. 2019;16(18):3318.

4. Onyeneho NG, Amazigo UV, Njepuome NA, Nwaorgu OC, Okeibunor JC. Perception and utilization of public health services in Southeast Nigeria: Implication for health care in communities with different degrees of urbanization. Int J Equity Health. 2016;15:12.

5. Kim J, Park M, Sung AD, Kim KH, Sung SH. Perception on the traditional Korean medicine according to the existence of a chronic disease. J Pharmacopuncture. 2020;23(4):252-61.

6. Clancy CM, Andresen EM. Meeting the health care needs of persons with disabilities. Milbank Q. 2002;80(2):381-91.

7. Lee JE, Kim HR, Shin HI. Accessibility of medical services for persons with disabilities: comparison with the general population in Korea. Disabil Rehabil. 2014;36(20):1728-34.

8. Gibson J, O'Connor R. Access to health care for disabled people: a systematic review. Soc Care Neurodisability. 2010;1(3):21-31.

9. Hwang K, Johnston M, Tulsky D, Wood K, Dyson-Hudson T, Komaroff E. Access and coordination of health care service for people with disabilities. J Disabil Policy Stud. 2009;20(1):28-34.

10. Zisman CR, Patti MA, Kalb LG, Stapp EK, Van Eck K, Volk H, et al. Complementary and alternative medicine use in children with a developmental disability and co-occurring medical conditions. Complement Ther Med. 2020;53:102527.

11. Konuk Sener D, Karaca A. Use of complementary and alternative medicine treatments by mothers of children with developmental disabilities: a cross sectional study. Nurs Health Sci. 2020;22(2):328-38.

12. National Institute of Oriental Medicine. A study on the introduction of traditional Korean medical doctors for the disabled [Internet]. Daejeon: National Institute of Oriental Medicine; 2018 [cited 2019 Feb 21]. Available from: https://policy.kiom.re.kr/sub0401/articles/view/tableid/sub0301-board/page/1/id/836.

13. Brown KA, Patel DR. Complementary and alternative medicine in developmental disabilities. Indian J Pediatr. 2005;72(11):949-52.

14. Ministry of Health and Welfare, National Development Institute of Korean Medicine, Gallup Korea. 2017 years national survey for usage of traditional Korean medicine. Seoul: National Development Institute of Korean Medicine; 2018.

15. Ministry of Health and Welfare. Disabled registration/disability level screening system [Internet]. Sejong: Ministry of Health and Welfare; 2021 [cited 2021 Oct 12]. Available from: http://www.mohw.go.kr/react/policy/index.jsp?PAR_MENU_ID=06&MENU_ID=06370111&PAGE=11&topTitle.

16. Purdy IB. Vulnerable: a concept analysis. Nurs Forum. 2004;39(4):25-33.

17. Lesser J, Escoto-Lloyd S. Health-related problems in a vulnerable population: pregnant teens and adolescent mothers. Nurs Clin North Am. 1999;34(2):289-99.

18. Nomura K, Koizumi A. Strategy against aging society with declining birthrate in Japan. Ind Health. 2016;54(6):477-9.

19. Ministry of Health and Welfare, Health Insurance Review & Assessment Service. Guidelines for pilot project for application of medical insurance of the medical herbs in package [Internet]. Sejong: Ministry of Health and Welfare; 2020 [cited 2020 Nov 18]. Available from: http://www.mohw.go.kr/react/al/sal0101vw.jsp?PAR_MENU_ID=04&MENU_ID=040101&page=1&CONT_SEQ=361079.

20. Hao X, Gu J, Ying X, Bo T, Fu W. Social support and care needs of the disabled elderly population: an empirical study based on survey data from Beijing, China. Biosci Trends. 2017;11(5):507-15.

21. Bahk J, Kang HY, Khang YH. The life expectancy gap between registered disabled and non-disabled people in Korea from 2004 to 2017. Int J Environ Res Public Health. 2019;16(14):2593.

22. Yoo SJ, Park SY. The "act on decisions on life-sustaining treat-

ment" in Korea and measures to support decision-making of persons with developmental disabilities. Asia Pac J Health Law Ethics. 2018;12(1):59-79.

23. Lee B, Park SY. Developing key performance indicators for guaranteeing right to health and access to medical service for persons with disabilities in Korea: using a modified Delphi. PLoS One. 2018;13(12):e0208651.

24. Shin DS, Choi YJ. A pilot study of team-based primary health care for people with disabilities in South Korea. J Interprof Care. 2019;33(1):129-32.

25. Kim JA, Choi YJ, Heo MS, Oh CH, Choi KH. Team-based primary care program for disabled people and changes in rate of unmet health care needs. Fam Pract. 2021;38(2):95-102.