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A cross-sectional study on national cancer screening participation among people with physical disabilities: focus on health screening experience and perceptions

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ABSTRACT

Background: A substantial disparity exists in cancer screening rates between individuals with and without physical disabilities, and there is a lack of information on the perceptions and experiences of cancer screening among individuals with disabilities and the factors influencing their participation.

Methods: In this cross-sectional descriptive study, data were collected from 167 individuals with physical disabilities in Korea, using a questionnaire survey. Data were analyzed using descriptive statistics, *t*-tests, ANOVA, chi-squared tests, Pearson's correlation, and multiple logistic regression analysis.

Results: The participation rate of individuals with physical disabilities in the national cancer screening program over the past 2 years was 55.1%. Perceived benefits of cancer screening were positive, whereas perceived barriers were lower than moderate. Self-efficacy regarding cancer screening was slightly above moderate. Individuals with prior health screening experience showed a significantly higher tendency to participate. Previous experience with health screening also led to differences in perceptions of cancer screening. Health screening experience and perceived benefits of cancer screening significantly influenced participation in national cancer screening.

Conclusions: To increase cancer screening participation among individuals with physical disabilities, it is crucial to not only reduce barriers to cancer screening but also enhance perceptions of its importance and benefits.

Keywords: cancer screening; health screening; perception; physical disability

Introduction

According to the World Health Organization (WHO), approximately 16% of the global population (1.3 billion people) were living with disabilities in 2021.[1] Physical disability is the most common type of disability. Due to their physical structure and functional issues, people with physical disabilities experience poor overall health outcomes and have higher mortality rates when diagnosed with cancer.[2] In response, both the United Nations' Sustainable Development Goals and the US Healthy People 2030 initiative have identified the reduction of health disparities, including health promotion for people with disabilities, as one of their key objectives.[3,4]

The WHO recommends national cancer control programs for reducing cancer incidence and death, as well as improving quality of life of patients and their families.[5] As a result of government policies following the WHO's recommendations, global cancer screening participation rates have continuously increased. Although cancer screening participation rates have also continuously increased among people with disabilities, a considerable disparity remains between the

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cancer screening participation rates of people with and without disabilities.[6]

Studies show that people with disabilities face challenges in accessing early cancer detection and treatment due to personal factors—such as physical functional limitations or low memory and intelligence or economic and educational levels—and physical barriers, such as inaccessible examination rooms and diagnostic equipment, ineffective communication with medical staff, and potentially biased attitudes among healthcare providers.[6–10] However, most studies on cancer screening utilization among people with disabilities are retrospective analyses based on public data. Survey-based or qualitative studies have predominantly focused on physical accessibility in breast and cervical cancer screening for women with disabilities. Comprehensive studies examining the various factors related to overall cancer screening utilization among individuals with disabilities remain limited. Furthermore, it is challenging to establish a relationship between the perception of cancer screening, which previous studies[11–13] have identified as a factor influencing the general population's health screening or cancer screening participation, and cancer screening participation among individuals with disabilities.

Therefore, this study aimed to identify the factors that affect the participation of individuals with physical disabilities in the national cancer screening program, focusing on their experiences with health screening and their perceptions of cancer screening.

Methods

Research participants and data collection

This study targeted individuals with physical disabilities who were at an increased risk of cancer mortality.[2] As long as the participants were willing and able to participate in the study, no restrictions were imposed according to the degree of their disability. Furthermore, the national cancer screening program in Korea primarily targets individuals in their 40s or 50s or older when screening for five major cancers, with the exception of cervical cancer, which is offered to women biennially, starting from age 20. We therefore recruited adults aged 41 or older to reflect the target population for most cancer screenings.

This study was approved by the Y Hospital Institutional Review Board (approval number 4-2023-0523). Data were collected between 1 September and 21 December 2023, in conjunction with the welfare center for the disabled in Seoul, Korea and other relevant associations. Surveys were either in-person and administered to center visitors, or online with participants recruited through association announcements. A total of 191 individuals participated in the survey, and 167 responses were included in the final analysis, after excluding 24 incomplete responses.

Instruments

The structured self-report questionnaire that was used comprised 42 items related to the following: experience of participating in national cancer screening within the past 2 years and prior experience with health screenings—including general health check-ups, private screenings, and earlier national cancer screenings—before that period (9 items), perceptions related to cancer screening (20 items)—including perceived benefits (5 items), barriers (8 items), and self-efficacy (7 items)—and general and disability-related characteristics (13 items). To measure cancer screening perceptions, the instruments for assessing benefits and barriers were modified from those developed by Kye *et al*.[14] and An,[15] while self-efficacy was measured using a modified version of the instrument, developed by Kye and Moon.[16] All responses used a 5-point Likert scale (1–5 scale). Higher mean scores indicated more favorable attitudes toward cancer screening or higher self-efficacy, while for barriers, higher scores represented greater perceived obstacles. The reliability showed a Cronbach's alpha of 0.82 for both benefits and barriers, and 0.77 for self-efficacy.

Data analysis

Data were analyzed using IBM SPSS Statistics/WIN ver. 27.0 software with the following methods:

(i) Descriptive statistics for participant characteristics, health screening experience, perceptions of cancer screening, and participation.
(ii) Independent *t*-tests to analyze relationships between perceptions and participation.
(iii) Independent *t*-test, one-way ANOVA (with Scheffé *post hoc* test), chi-squared test, and Pearson's correlation to analyze perceptions and participation based on participant characteristics and prior health screening experiences.
(iv) Multiple logistic regression to analyze factors influencing participation.

Results

Participant characteristics

Participants' general and disability-related characteristics are listed in Table 1. The participants were evenly split between males (49.1%, $n = 82$) and females (50.9%, $n = 85$), with a mean age of 60.20 ± 11.20 years. Regarding disability characteristics, the most common were limb impairments,

Table 1 Perceptions of cancer screening and participation in national cancer screening by participant characteristics

Variables		*(N = 167)*									
		N (%)/ Mean (SD)	*Perceived benefits of CS*		*Perceived barriers to CS*		*Self-efficacy for CS*		*NCS*		
									Yes	*No*	
			Mean (SD)	*t/F/r (P)*	*Mean (SD)*	*t/F/r (P)*	*Mean (SD)*	*t/F/r (P)*	*N (%)/mean (SD)*		*t/χ^2 (P)*
General characteristics											
Sex	Male	82 (49.1)	4.25 (0.50)	0.30 (.585)	2.69 (0.75)	3.16 (.077)	3.66 (0.64)	0.24 (.626)	40 (48.8)	42 (51.2)	2.60 (.107)
	Female	85 (50.9)	4.21 (0.59)		2.89 (0.74)		3.70 (0.62)		52 (61.2)	33 (38.8)	
Age (years)		60.20 (11.20)		−0.07 (.365)		−0.01 (.937)		**−0.18 (.021)**	60.03 (9.52)	60.42 (13.05)	−0.22 (.826)
Education	≤ Middle school[a]	39 (23.4)	4.13 (0.54)	1.31 (.272)	**3.03 (0.71)**	**5.88 (.003)**	**3.47 (0.52)**	**5.34 (.006)**	16 (41.0)	23 (59.0)	5.96 (.051)
	High school[b]	57 (34.1)	4.21 (0.56)		**2.90 (0.67)**	**a,b > c**	3.61 (0.63)	**a < c**	30 (52.6)	27 (47.4)	
	≥College[c]	71 (42.5)	4.30 (0.55)		**2.58 (0.78)**		**3.85 (0.64)**		46 (64.8)	25 (35.2)	
Marital status	Married	85 (50.9)	4.20 (0.56)	0.44 (.510)	2.75 (0.78)	0.50 (.479)	85 (3.73)	1.26 (.263)	48 (56.5)	37 (43.5)	0.13 (.715)
	Unmarried	82 (49.1)	4.26 (0.54)		2.84 (0.72)		82 (3.62)		44 (53.7)	38 (46.3)	
Employment status	Employed	73 (43.8)	4.23 (0.54)	0.00 (.958)	2.80 (0.77)	0.01 (.925)	**3.82 (0.59)**	**6.56 (.011)**	42 (57.5)	31 (42.2)	0.31 (.576)
	Non-employed	94 (56.3)	4.23 (0.56)		2.79 (0.74)		**3.57 (0.64)**		50 (53.2)	44 (46.8)	
Monthly family income (10 000)	<100[a]	74 (44.3)	4.32 (0.54)	2.63 (.075)	2.84 (0.67)	2.12 (.123)	**3.57 (0.62)**	**5.59 (.004)**	41 (55.4)	33 (44.6)	0.31 (.858)
	100–299[b]	66 (39.6)	4.11 (0.56)		2.85 (0.76)		**3.66 (0.63)**	**a,b < c**	35 (53.0)	31 (47.0)	
	≥300[c]	27 (16.2)	4.27 (0.53)		2.52 (0.90)		**4.03 (0.54)**		16 (59.3)	11 (40.7)	
Financial difficulties with medical expenses	Not at all[a]	10 (6.0)	4.20 (0.51)	0.27 (.845)	**2.25 (0.89)**	**6.83 (<.001)**	4.03 (0.69)	**2.91 (.036)**	4 (40.0)	6 (60.0)	1.59 (.661)
	Little difficult[b]	29 (17.4)	4.17 (0.61)		**2.54 (0.76)**	**a,b,c <d**	3.89 (0.78)		15 (51.7)	14 (48.3)	
	Some difficult[c]	69 (41.3)	4.22 (0.51)		**2.72 (0.68)**		3.64 (0.52)		41 (59.4)	28 (40.6)	
	Very difficult [d]	59 (35.3)	4.27 (0.58)		**3.09 (0.70)**		3.57 (0.62)		32 (54.2)	27 (45.8)	
Disability characteristics											
Main disability	Limb impairments	72 (43.1)	4.19 (0.60)	0.93 (.449)	2.73 (0.63)	**3.14 (.016)**	3.66 (0.68)	1.00 (.407)	38 (52.8)	34 (47.2)	2.27 (.687)

(continued)

Table 1 Continued

Variables		(N = 167) N (%)/ Mean (SD)	Perceived benefits of CS		Perceived barriers to CS		Self-efficacy for CS		NCS		
									Yes	No	
			Mean (SD)	t/F/r (P)	Mean (SD)	t/F/r (P)	Mean (SD)	t/F/r (P)	N (%)/mean (SD)		t/χ^2 (P)
	Brain impairments	30 (18.0)	4.31 (0.51)		2.65 (0.62)		3.70 (0.61)		14 (46.7)	16 (53.3)	
	Visual impairments	20 (12.0)	4.12 (0.39)		2.54 (0.76)		3.81 (0.46)		13 (65.0)	7 (35.0)	
	Internal organ impairments	33 (19.8)	4.24 (0.57)		3.03 (0.94)		3.74 (0.54)		20 (60.6)	13 (39.4)	
	Others	12 (7.2)	4.45 (0.52)		3.27 (0.86)		3.38 (0.79)		7 (58.3)	5 (41.7)	
Duration of disability (years)		24.62 (15.16)		−0.04 (.610)		−0.05 (.500)		−0.04 (.633)	24.10 (12.80)	25.27 (17.70)	−0.49 (.623)
Disability severity	Severe[1–3]	119 (71.3)	4.23 (0.56)	0.00 (.991)	2.79 (0.71)	0.00 (.993)	3.63 (0.61)	2.94 (.088)	65 (54.6)	54 (45.4)	0.04 (.848)
	Mild[4–6]	48 (28.7)	4.23 (0.53)		2.79 (0.85)		3.81 (0.66)		27 (56.3)	21 (43.8)	
Need for assistance with ADL	Yes	108 (64.7)	4.19 (0.55)	1.28 (.260)	**2.70 (0.66)**	**4.35 (.039)**	3.66 (0.60)	0.41 (.521)	59 (54.6)	49 (45.4)	0.03 (.871)
	No	59 (35.3)	4.29 (0.55)		**3.00 (0.88)**		3.72 (0.68)		33 (55.9)	26 (44.1)	
Independent outing	Yes	124 (74.3)	4.24 (0.56)	0.30 (.588)	2.86 (0.78)	3.50 (.063)	3.69 (0.64)	0.09 (.765)	**75 (60.5)**	**49 (39.5)**	**5.66 (.017)**
	No	43 (25.7)	4.19 (0.52)		2.61 (0.63)		3.65 (0.59)		**17 (39.5)**	**26 (60.5)**	
Communication	Fully[a]	111 (66.5)	4.26 (0.58)	1.02 (.386)	2.70 (0.75)	2.60 (.054)	**3.73 (0.61)**	**4.31 (.006)**	63 (56.8)	48 (43.2)	2.34 (.505)
	Mostly[b]	32 (19.2)	4.23 (0.45)		2.94 (0.80)		**3.76 (0.60)**	**a,b > d**	19 (59.4)	13 (40.6)	
	Minimally[c]	13 (7.8)	4.14 (0.60)		3.24 (0.61)		3.57 (0.66)		6 (46.2)	7 (53.8)	
	Assistance needed[d]	11 (6.6)	3.98 (0.37)		2.77 (0.60)		**3.06 (0.55)**		4 (36.4)	7 (63.6)	

Note. In marital status, "Unmarried" includes single, divorced, separated, and widowed. In main disability, "Internal organ impairments" represents renal and liver impairments, and "Others" includes auditory and facial impairments. Bold indicates $P < .05$. CS, Cancer screening; NCS, National cancer screening; SD, Standard deviation; ADL, activities of daily living.

[a,b,c,d]Scheffé test.

followed by internal organ (19.8%, $n = 33$), brain (18.0%, $n = 30$), and visual impairments (12.0%, $n = 20$). Other disabilities included auditory (4.8%, $n = 8$) and facial impairments (2.24%, $n = 4$). The average disability duration of severe disability was 24.62 ± 15.16 years, with 71.3% ($n = 119$) having severe disabilities (grades 1–3 on a 1–5 scale). Of the participants, 64.7% ($n = 108$) needed assistance in activities of daily living, while 74.3% ($n = 124$) could go out independently. Most participants could communicate fully (66.5%, $n = 111$) or mostly (19.2%, $n = 32$) on their own.

Experience with health screening

Participants' experiences with general health screening are reported in Table 2. Most participants (81.4%, $n = 136$) had

Table 2 Perceptions of cancer screening and participation in national cancer screening by health screening experiences

(N = 167)

Variables		*N (%)/ Mean (SD)*	*Perceived benefits of CS*		*Perceived barriers to CS*		*Self-efficacy for CS*		*NCS*		
									Yes	*No*	
			Mean (SD)	*t/F/r (P)*	*Mean (SD)*	*t/F/r (P)*	*Mean (SD)*	*t/F/r (P)*	*N (%)/ Mean (SD)*		*t/χ^2 (P)*
Experience with health screening	Yes	136 (81.4)	4.26 (0.53)	2.72 (.101)	**2.72 (0.69)**	**6.43 (.012)**	3.66 (0.60)	0.64 (.426)	**88 (64.7)**	**48 (35.3)**	**27.38 (<.001)**
	No	31 (18.6)	4.08 (0.62)		**3.10 (0.92)**		3.76 (0.76)		**4 (12.9)**	**27 (87.1)**	
Understanding regarding disabilities among healthcare providers (*N* = 136)		3.36 (0.93)		0.14 (.106)		−0.15 (.084)		**0.27 (.002)**	3.32 (0.93)	3.45 (0.93)	−0.77 (.445)
Satisfaction with services provided by healthcare providers (*N* = 136)		3.54 (0.74)		0.15 (.085)		**−0.27 (.001)**		**0.24 (.006)**	3.55 (0.76)	3.53 (0.72)	0.10 (.920)
Satisfaction with examination facilities, equipment (*N* = 136)		3.29 (0.83)		0.16 (.057)		−0.14 (.100)		**0.19 (.025)**	3.27 (0.84)	3.32 (0.81)	−0.31 (.757)
Satisfaction with convenience facilities (*N* = 136)		3.36 (0.86)		**0.26 (.003)**		**−0.18 (.036)**		**0.23 (.007)**	3.30 (0.85)	3.49 (0.88)	−1.25 (.214)
Awareness of disability-friendly health screening	Never heard of it[a]	104 (62.3)	4.15 (0.54)	2.38 (.072)	2.71 (0.65)	2.48 (.063)	**3.65 (0.62)**	**2.82 (.041)**	55 (52.9)	49 (47.1)	0.79 (.851)
	Heard of it but not well-informed[b]	34 (20.4)	4.32 (0.55)		3.08 (0.90)		3.64 (0.62)	**a < d** *	19 (55.9)	15 (44.1)	
	Roughly informed[c]	24 (14.4)	4.37 (0.57)		2.81 (0.58)		3.71 (0.50)		15 (62.5)	9 (37.5)	
	Well-informed[d]	5 (3.0)	4.60 (0.42)		2.45 (1.72)		**4.46 (0.98)**		3 (60.0)	2 (40.0)	

Note. The bold values indicate $P < .05$. CS, Cancer screening; NCS, National cancer screening; SD, Standard deviation.
[a,b,c,d]Scheffé test.

undergone a health screening. Those with screening experience rated healthcare providers' disability understanding at 3.36 ± 0.93 and overall satisfaction with service at 3.54 ± 0.74. Satisfaction with examination facilities and equipment and convenience facilities for individuals with disabilities averaged 3.29 ± 0.83 and 3.36 ± 0.86, respectively. Regarding disability-friendly health screening projects, 62.3% (n = 104) had never heard of them, 20.4% (n = 34) had heard of them but were unfamiliar, and only 4.2% (n = 7) had used such services.

Perceptions of cancer screening and participation in national cancer screening

Table 3 shows participants' perceptions of cancer screening and participation in national cancer screening programs. In the past two years, 55.1% (n = 92) had undergone national cancer screening. Participants showed positive perceptions of cancer screening benefits (mean score 4.23 ± 0.55 out of 5). Perceived barriers were lower than moderate (2.79 ± 0.75), whereas self-efficacy was relatively higher (3.68 ± 0.63). Perceived benefits were the only variable significantly related to actual participation (t = 3.47, $P < .001$). Participants perceived higher benefits (4.36 ± 0.51) compared to non-participants (4.07 ± 0.55).

Perceptions of cancer screening and participation in national cancer screening by participant characteristics and health screening experience

Table 1 shows the differences in perceptions of cancer screening and participation in the national cancer screening program based on participant characteristics. In terms of disability-related characteristics, significant differences in barriers and self-efficacy levels were observed according to type of primary disability, need for assistance with activities of daily living, ability to go out independently, and communication ability level. Barriers differed by primary disability type (F = 3.14, P = .016). Those who did not need assistance with activities of daily living perceived higher screening barriers than those who did (t = 4.35, P = .039). Self-efficacy was greater

Table 3 Levels of perceptions of cancer screening and participation in national cancer screening

(N = 167) *Variables*			*NCS*				
	Total		*Yes*		*No*		
	Mean	*(SD)*	*N/Mean*	*(%/SD)*	*N/Mean*	*(%/SD)*	*t (P)*
Experience of the NCS			92	(55.1)	75	(44.9)	
Perceived benefits of CS[1–5]	4.23	(0.55)	**4.36**	**(0.51)**	**4.07**	**(0.55)**	**3.47 (<.001)**
Perceived barriers to CS[1–5]	2.79	(0.75)	2.73	(0.79)	2.87	(0.70)	−1.25 (.215)
Self-efficacy for CS[1–5]	3.68	(0.63)	3.75	(0.58)	3.59	(0.67)	1.70 (.092)

Note. The bold values indicate $P < .05$. NCS, National cancer screening; CS, Cancer screening; SD, Standard deviation.

Table 4 Factors influencing participation in national cancer screening

(N = 167)				
Variables		*OR*	*95% CI*	*P*
Independent outing	Yes	2.10	0.96–4.63	.065
Experience with health screening	Yes	**11.57**	**3.71–36.14**	**<.001**
Perceived benefits of cancer screening		**2.67**	**1.36–5.24**	**.004**
−2 Log likelihood = 187.68, $\chi^2 = 42.10$ ($P < .001$), Hosmer & Lemeshow test: $\chi^2 = 3.70$ ($P = .883$), Nagelkerke $R^2 = 0.298$				

Note. The bold values indicate $P < .05$. OR, Odds ratio; CI, Confidence interval.

among those who could communicate fully or mostly on their own than among those who required assistance ($F = 4.31$, $P = .006$). Participation rates were higher among those capable of independent outings than among those who were not ($\chi^2 = 5.66$, $P = .017$).

Table 2 shows the differences in perceptions of cancer screening and participation in national cancer screening based on health screening experiences. Participants with health screening experience perceived lower barriers to cancer screening and exhibited higher participation rates ($\chi^2 = 27.38$, $P < .001$). Concerning health screening experience, higher satisfaction with convenience facilities for people with disabilities at screening institutions was associated with positive perceptions of the benefits ($r = 0.26$, $P = .003$), while higher satisfaction with the services of healthcare providers ($r = -0.27$, $P = .001$) and convenience facilities ($r = -0.18$, $P = .036$) were associated with lower barriers. The understanding of disabilities among healthcare providers ($r = 0.27$, $P = .002$), satisfaction with their service ($r = .24$, $P = .006$), examination facilities and equipment for individuals with disabilities ($r = 0.19$, $P = .025$), and disability-friendly convenience facilities ($r = 0.23$, $P = .007$) all showed significant positive correlations with self-efficacy. Furthermore, those familiar with disability-friendly health screening projects had higher self-efficacy than those who had never heard of it ($F = 2.82$, $P = .041$).

Factors influencing participation in national cancer screening

A logistic regression analysis was conducted, incorporating the following variables that demonstrated significant differences in national cancer screening participation in the univariate analysis among participant characteristics, health screening experience, and perceptions of cancer screening: availability to go out independently, participation in general health screening, and perceptions of benefits. Results revealed that the experience of health screening and perceived benefits of cancer screening significantly influenced participation in the national cancer screening program. Those with health screening experience were 11.57 times more likely to participate in national cancer screening than those without (95% CI = 3.71–36.14, $P < .001$). A one-point increase in the perceived benefits of cancer screening was associated with 2.67 times rise in the likelihood of participation in national cancer screening (95% CI = 1.36–5.24, $P = .004$, Table 4).

Discussion

Main findings of this study

By examining their perceptions of cancer screening, this study provides comprehensive information on factors influencing national cancer screening participation among individuals with physical disabilities, thereby offering implications for increasing cancer screening participation rates. Our results revealed that individuals with physical disabilities generally hold favorable views toward cancer screening benefits, while perceiving moderate barriers. Their self-efficacy in cancer screening was also moderately positive. Among cancer screening perceptions, perceived benefits were the only significant predictor of participation. In contrast, perceived barriers and self-efficacy did not significantly influence participation when controlling for other factors. Additionally, perceptions of cancer screening were significantly associated with prior health screening experiences.

What is already known on this topic

In 2023, the cancer screening participation rate among individuals with physical disabilities was 55.1%, which was still lower than the overall national rate of 58.2% in South Korea.[17] However, this figure notably exceeds the 44.2% participation rate of all individuals with disabilities reported in the 2021 Disability Health Statistics.[18] This may be due to the study's focus on individuals with physical disabilities, who typically exhibit higher cancer screening rates than those with mental disabilities.[18]

Perceptions of the benefits of cancer screening among individuals with physical disabilities were generally higher in this study than in previous studies on the perceptions of cancer screening among older adults in Korea,[19] colorectal cancer screening among adults in Korea,[20] colorectal cancer screening among older adults in China,[21] and breast cancer screening among Iranian adult women.[22] Perceived barriers were generally higher than in these studies, except for a study by Kim and Yu,[19] and self-efficacy levels were lower overall. Because of the variations in the measurement tools used to assess perceptions of cancer screening in each study, direct comparisons of the results are challenging. Numerous studies have elucidated the relationship between the general population's perceptions of cancer screening and actual screening behaviors, based on the Health Belief Model,[23–25] and the findings have led to interventions aimed at increasing cancer screening rates.[26,27] However, research on cancer screening among individuals with disabilities—including those with physical disabilities—has primarily focused on disability-related barriers, demographic characteristics, and healthcare access. The experiences and perceptions of individuals with disabilities regarding cancer screening have also been limited to qualitative studies.[8] Thus, there is a need for quantitative assessments of cancer screening perceptions among individuals with disabilities, using validated tools. Furthermore, to enhance cancer screening rates in this population, it is crucial to comprehensively predict various factors influencing participation, including perceptions of cancer screening, as is done for the general population. This approach may lead to more targeted and effective strategies to improve cancer screening uptake among individuals with physical disabilities.

What this study adds

More than 80% of the participants reported that they had previous experience with health screening, which was associated with decreased perceived barriers to cancer screening and higher screening rates among individuals with disabilities. Moreover, experiences with health screening—including healthcare providers' understanding of disabilities, satisfaction with their services, satisfaction with examination facilities and equipment for individuals with disabilities, and satisfaction with disability-friendly convenience facilities—contributed to differences in cancer screening perceptions. While it is difficult to compare the results of the current study and previous research due to a lack of quantitative research on cancer screening perceptions among individuals with disabilities, qualitative studies have highlighted challenges faced by those with physical disabilities during screenings. These include difficulties accessing equipment, assuming examination positions,[2,10,28] negative responses from healthcare providers[8,29] and convenience facilities that were not disability-friendly.[8,29,30] Although these experiences did not significantly affect actual screening uptake in this study, Kim *et al*.[31] reported that satisfaction with medical facilities and good communication during service were significant factors influencing cancer screening participation among individuals with disabilities. In 2018, Korea initiated the Disability-Friendly Health Screening Project to address barriers for individuals with disabilities. This project aims to create accessible screening environments for everyone by designating disability-friendly institutions and financially supporting renovation of equipment and facilities.[32] However, >80% of the participants had either never heard of or were unfamiliar with the project, and only seven participants had utilized it. Therefore, promoting awareness of disability-friendly health screening systems is an urgent priority.

This study also found that high levels of satisfaction with healthcare providers' services and screening institution convenience facilities during previous health screenings had significantly reduced perceptions of barriers to cancer screening. Interestingly, healthcare providers' understanding of disabilities and screening facilities and equipment did not

significantly relate to perceived barriers. This contrasts with studies reporting inadequate facilities and equipment[2,10,28] and lack of provider understanding of disabilities[8,29] as barriers to participation. Further research is needed to validate whether the focus should shift toward services that enhance convenience and comfort for individuals with physical disabilities during screenings, including assistance with access to the examination table and positioning on it. This can inform future institutional support and improvements in cancer screening accessibility.

This study only identified participation in health screening and the perceived advantages of cancer screening as factors affecting participation in the national cancer screening program. This suggests that increasing perception of the importance and benefits of early cancer detection and treatment through cancer screening is likely to lead to engagement in cancer screening behaviors. This finding aligns with general population studies on breast, cervical, and colorectal cancers.[8,23,25,33] However, unlike other studies where perceived barriers to cancer screening were the strongest predictor,[27,34] our results suggest a different focus among individuals with physical disabilities. Policies for increasing cancer screening among this population have primarily targeted barrier elimination, but more effort should be directed toward enhancing perceptions of the importance of screening and usefulness. Given the limited research on cancer screening in populations with disabilities, which are mostly based on secondary analyses of public data, more diverse prospective studies incorporating psychosocial factors should be conducted to inform comprehensive policy formulation for improving screening participation.

Limitations of this study

While this study provides novel insights into perceptions of cancer screening and its impact on participation among individuals with physical disabilities, it has limitations. First, the study population was limited to individuals visiting welfare centers in Seoul, or who were registered with disability associations, potentially excluding less mobile individuals. Additionally, discrepancies in disability severity and type, compared to national statistics, may have led to over or underestimation of perceptions and screening rates. Second, our study did not examine variations in participation rates and perceptions across different specific cancer types. Given our research focus on understanding general patterns of cancer screening perceptions, and actual participation rates among individuals with physical disabilities—areas that have been underexplored in previous studies—rather than cancer type-specific characteristics, as well as the limited nature of our sample, we were unable to conduct subgroup analyses by specific cancer types, as seen in larger big data studies. Additionally, while physical disabilities encompass a wide range of conditions from external impairments to internal organ disabilities, our study design and analysis did not fully account for these varied conditions. However, our findings provide a foundation for future research to examine cancer type–specific screening uptake and to identify strategies for improving participation among individuals with physical disabilities. Future research should address these limitations by employing larger, more diverse samples that would enable examination of differences across specific cancer types and screening methods, while also accounting for the heterogeneous nature of physical disabilities. This will provide a more comprehensive understanding of cancer screening perceptions and behaviors among individuals with physical disabilities, informing more effective interventions and policies.

Conclusion

The results showed higher perceived benefits of cancer screening among individuals with physical disabilities compared to the general population, and higher perceived barriers and lower self-efficacy. Previous experience with health screening and a high level of perceived benefits of cancer screening were identified as factors influencing cancer screening participation. These findings suggest that policies should focus on reducing barriers to cancer screening for individuals with physical disabilities, and on enhancing perceptions of screening significance and benefits. As this is one of the few studies to quantitatively investigate perceptions of cancer screening among individuals with physical disabilities, future research should include a more diverse participant pool and employ repeated, in-depth studies to further understand and improve cancer screening rates in this population.

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Conflict of interest

The authors report no conflicts of interest in this research.

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Data availability

The data that support the findings of this study are available from the corresponding authors upon reasonable request.

Ethics approval and consent to participate

This study was conducted after obtaining approval from the Y Hospital Institutional Review Board to protect the participants (approval number 4-2023-0523). Before administering the survey, we informed the participants about the study's purpose, methods, duration, number of participants, protection of personal information, voluntary participation and withdrawal rights, and compensation for participating in the study. Only after obtaining participants' consent did, we proceed with the survey.

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