

Original Article

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Associations of Alcohol Drinking with Chronic Diseases among Korean Men with Severe Vision Disorders

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ABSTRACT

Background: Visually impaired individuals have a higher prevalence of chronic diseases compared with the general Korean population. However, little is known about the associations between alcohol drinking and chronic diseases in this population. This study aimed to examine these associations among severe vision disorders among adult men.

Methods: A total of 237 men severely visually impaired adults aged 50 years or older were surveyed. Alcohol use was assessed using the Alcohol Use Disorders Identification Test–Korean version. Logistic regression analyses were performed to identify associations between alcohol drinking behaviors and chronic diseases, adjusting for age, body mass index, education level, economic activity, physical activity, regular diet habits and smoking.

Results: Hypertension was the most common condition (22.8%), followed by liver disease (16.6%) and diabetes mellitus (16.2%). Other reported conditions included osteoarthritis (9.0%), pneumonia (8.4%), kidney disease (8.2%), heart disease (5.7%), cerebrovascular disease (5.7%), cancer (4.5%), and gout (3.1%). Only 11.8% of participants reported no chronic conditions, while 22.4% had one and 28.3% had two. Multimorbidity (≥ 3 conditions) was observed in 37.6% of participants, with 7.2% reporting five or more conditions. Past drinkers/non-drinkers showed a significantly lower odds of heart disease ($P=0.006$) and pneumonia ($P=0.011$). In contrast, arthritis showed a significantly higher risk among current drinkers ($P=0.039$). Hazardous drinkers (Alcohol Use Disorders Identification Test–Korean version score ≥ 8) showed a higher prevalence of cancer ($P=0.023$) and liver disease ($P=0.024$) compared with non-hazardous drinkers. Hazardous drinking was associated with 9.00-fold increased risk of diabetes (95% confidence interval=1.68–48.14, $P<0.05$).

Conclusions: Hazardous drinking showed 9.00-fold increased risk of diabetes among adults with severe visual impairment. Tailored health promotion programs are needed to address alcohol drinking behaviors and prevent chronic diseases in this population.

Keywords: Vision disorders, Alcohol drinking, Chronic disease, Health behavior, Alcoholism

INTRODUCTION

Visually impaired individuals experience higher rates of chronic

disease than those without disabilities. According to the 2020 national survey on persons with disabilities in Korea, the prevalence of hypertension among visually impaired individuals was

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43.7%, nearly three times that in the general population (14.8%). Similarly, diabetes prevalence was more than double (25.0% vs. 9.7%) [1]. Such disparities cannot be explained by biological factors alone; they are likely influenced by restricted living environments, limited healthcare access, and unique health behaviors. Global surveillance reports, including World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC) data, have consistently documented similar disparities in health outcomes among visually impaired populations [2-4]. Prior research has also confirmed that vision disorders is strongly associated with reduced healthcare utilization and delayed access to treatment, underscoring systemic barriers for visually impaired individuals [5]. In Korea, epidemiological studies have reported a notable prevalence of alcoholism and their health-related consequences [6].

Alcohol drinking is a well-established risk behavior associated with cardiovascular disease, diabetes, respiratory illness, and cancer. Epidemiological evidence has also shown that blindness is correlated with systemic diseases such as diabetes and renal dysfunction, highlighting the intersection of visual impairment and chronic illness [7]. However, previous research on people with disabilities has largely focused on general health behaviors, healthcare access, and quality of life, with few empirical studies specifically addressing the relationship between alcohol drinking and chronic diseases in visually impaired populations. U.S. data also indicate that adults with vision disorders face significant barriers to healthcare access and utilization [8]. Furthermore, problem drinking among people with disabilities has been shown to increase the risk of chronic diseases, underscoring the importance of targeted investigations [9].

This study therefore seeks to analyze the associations between alcohol drinking behaviors and chronic disease diagnoses among men with severe vision disorders aged 50 years or older, providing foundational evidence for developing tailored health promotion strategies. National reviews have emphasized the need for preventive policies focused on alcoholism in Korea, further supporting the rationale for this study [10]. Recent national statistics also highlight persistent health inequities among people with disabilities, reinforcing the urgency of evidence-based interventions [11-13]. This subgroup focus is further justified by evidence that older adults with both diabetes and vision disorders face heightened risks of malnutrition and chronic disease, highlighting the vulnerability of this population [14].

METHODS

Participants

This study included 237 men aged 50 years and older with severe vision disorders who were officially registered as persons with disabilities in Korea and held disability welfare card. Participants were recruited from the alumni associations member's list of blind schools and vocational training centers for visually impaired nationwide. Also from the blind churches. We telephoned 450 visually impaired people, There were 46 cases (10.2%) where the phone ringtone was not received, 15 cases (3.3%) where the number did not exist or was changed to someone else's name, and 32 cases (7.1) where the call was made but the person was under 50 years old or had mild vision disorders and thus did not meet the study criteria and 54 cases (12.0%) of them refused to participate in the survey, because the burden of the survey or recording, inconvenience to their family, or lack of time.

The minimum required sample size was calculated using G*Power software, assuming a medium effect size, $\alpha=0.05$, and a 95% confidence level, resulting in 287 participants. To ensure sufficient power, the final target sample was set at 303.

This study was approved by the Institutional Review Board of Sahmyook University (IRB No. SYU 2023-02-015-002). Verbal informed consent was obtained from all participants by telephone prior to data collection, and the process was recorded. Confidentiality and anonymity were strictly maintained; no personally identifiable information was collected, and all analyses were performed on de-identified data.

Measures

Alcohol use

Measured using the Alcohol Use Disorders Identification Test–Korean version (AUDIT-K) [15,16]. The AUDIT-K has demonstrated good reliability and validity in Korean populations [16] and is also used in national addiction surveillance, ensuring comparability with current epidemiological data on alcohol use in Korea [12]. AUDIT-K was administered only to current drinkers, in accordance with the survey protocol of the Korea National Health and Nutrition Examination Survey (KNHANES).

Current drinkers

Current drinkers were those who responded “Yes” to the ques-

tion, “Do you currently drink alcohol?”, and the AUDIT-K was administered only to this group.

Past drinkers

Past drinkers were those who answered “No” to the same question but reported a history of alcohol drinking.

Non-drinkers

Non-drinkers were participants who reported no history of alcohol use.

Information regarding the duration of abstinence or reasons for quitting (e.g., medical advice, health problems, or personal decision) was not available in the dataset.

Hazardous drinkers

Defined as those with an Alcohol Use Disorders Identification Test (AUDIT) score ≥ 8 .

Chronic diseases

Chronic diseases were defined according to self-reported physician diagnoses, based on the standardized questionnaire of the Korea National Health and Nutrition Examination Survey. Participants were asked, “Have you ever been diagnosed with [disease] by a doctor?” and “When was your condition diagnosed?” Responses were used to classify whether a participant had ever been diagnosed with each condition. Accordingly, these variables represent lifetime prevalence rather than incidence or current disease status. Broad categories such as “liver disease” and “kidney disease” were used as defined in the KNHANES questionnaire without additional clinical criteria.

Statistical analysis

Analyses were conducted using SPSS version 28.0 (IBM Corp.). Descriptive and correlation analyses were performed, followed by logistic regression to examine associations between alcohol use and chronic disease diagnoses. Binary logistic regression was employed to evaluate the explanatory power of sociodemographic and health-related variables. Statistical significance was set at $P < 0.05$, with Fisher’s exact tests applied when appropriate. Analyses were adjusted for age, body mass index (BMI), education level, economic activity, physical activity, regular diet habits, smoking.

RESULTS

Table 1 presents the general vision disorders included in the study. The mean age of participants was 66.2 ± 8.76 years, and the mean BMI was 24.1 ± 2.77 kg/m². Most participants (75.1%) had an education level up to high school, and 65.8% reported having two or more chronic diseases. Regarding lifestyle behaviors, 40.1% engaged in excessive physical activity, while 37.6% showed insufficient levels. Nearly half of the participants (44.3%) reported poor eating habits, and 48.1% were classified as hazardous drinkers (AUDIT ≥ 8). In addition, 21.9% were current smokers, and 52.3% were past smokers.

Fig. 1 presents the prevalence of chronic diseases among participants with vision disorders. The most common chronic condition was hypertension (22.8%), followed by liver disease

Table 1. General characteristics of men with vision disorders

Variable	Value
Age (yr)	66.2 $\pm$ 8.76
BMI (kg/m ²)	24.1 $\pm$ 2.77
Education level	
Up to high school level	178 (75.1)
College or higher	59 (24.9)
Multimorbidity (≥ 2)	
≤ 1 chronic disease	81 (34.2)
≥ 2 chronic diseases	156 (65.8)
Physical activity	
Insufficient physical activity	89 (37.6)
Sufficient physical activity	53 (22.4)
Excessive physical activity	95 (40.1)
Healthy eating habits	
Good	30 (12.7)
Moderate	102 (43.0)
Poor	105 (44.3)
Drinking	
Current drinking	138 (58.2)
Past drinking	80 (33.8)
Non-drinker	19 (8.0)
Smoking	
Current smoking	52 (21.9)
Past smoking	124 (52.3)
Non-smoking	61 (25.7)
Drinking	
Current drinking	138 (58.2)
Past drinking	80 (33.8)
Non-drinker	19 (8.0)
AUDIT	
Normal drinking (AUDIT 0–7)	123 (51.9)
Hazardous drinking (AUDIT 8–15)	52 (21.9)
Harmful drinking (AUDIT ≥ 16)	62 (26.2)

Values are presented as mean $\pm$ standard deviation or number (%).

AUDIT, Alcohol Use Disorders Identification Test; BMI, body mass index.

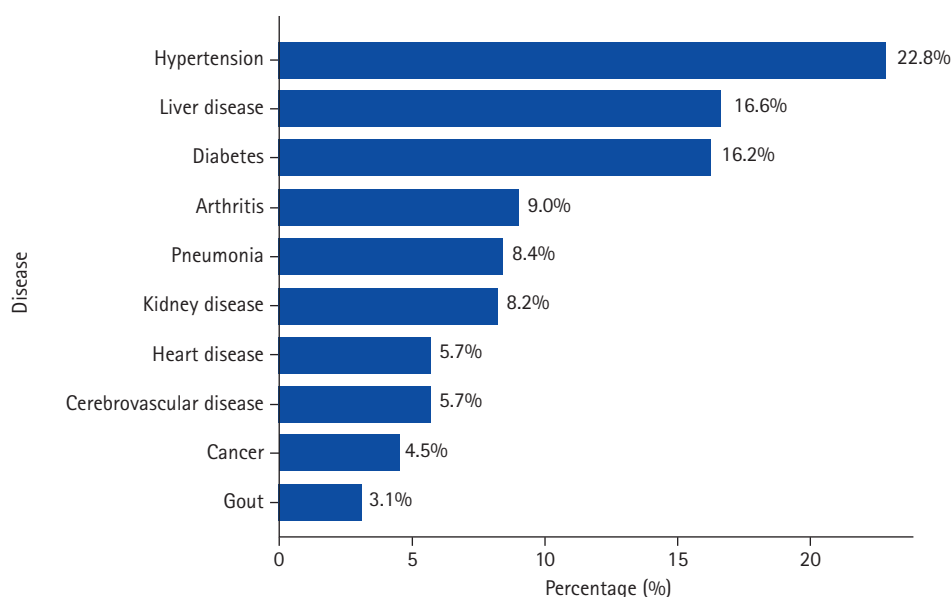


Fig. 1. Prevalence of chronic diseases.

(16.6%) and diabetes (16.2%). Arthritis (9.0%), pneumonia (8.4%), and kidney disease (8.2%) were also relatively prevalent. In contrast, heart disease (5.7%), cerebrovascular disease (5.7%), cancer (4.5%), and gout (3.1%) showed lower prevalence rates. Overall, hypertension, liver disease, and diabetes were the most frequently reported chronic conditions in this population.

Fig. 2 presents the overall burden of multimorbidity. Only 11.8% of participants reported no chronic conditions, while 22.4% had one and 28.3% had two. Multimorbidity (≥ 3 conditions) was observed in 37.6% of participants, with 7.2% reporting five or more conditions. These findings indicate that a substantial proportion of vision disorders men face complex challenges related to chronic disease management.

Logistic regression analyses were conducted to examine the association between current alcohol drinking and the prevalence of chronic diseases, using past drinkers/non-drinkers as the reference group. The odds ratios (ORs) and 95% confidence intervals (CIs) are presented in **Table 2**.

Compared with past drinkers/non-drinkers, current drinkers showed a significantly lower odds of heart disease (OR=0.16, 95% CI=0.04–0.59, $P=0.006$) and pneumonia (OR=0.28, 95% CI=0.11–0.75, $P=0.011$) showed significantly lower risks among current drinkers compared to past drinkers or non-drinkers. In contrast, arthritis (OR=3.08, 95% CI=1.06–8.96, $P=0.039$) showed a significantly higher risk among current drinkers.

Although cerebrovascular disease (OR=2.91, 95% CI=0.91–

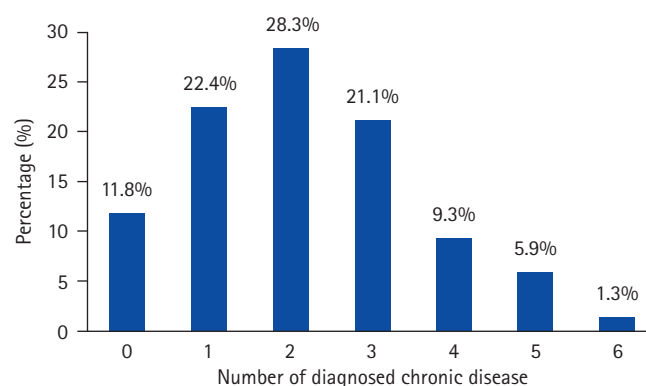


Fig. 2. Distribution of the number of chronic diseases.

9.34, $P=0.073$) was not statistically significant, it tended to show an increased risk in current drinkers. Other diseases, including cancer, diabetes, liver disease, hypertension, kidney disease, and gout, did not show significant differences.

Among drinkers, the prevalence of chronic diseases was further compared between hazardous drinkers (AUDIT ≥ 8) and non-hazardous drinkers (AUDIT < 8). As shown in **Table 3**, hazardous drinkers had significantly higher prevalence of cancer (15.1% vs. 5.4%, $P=0.023$) and liver disease (43.4% vs. 28.6%, $P=0.024$).

Finally, **Table 4** shows the association between the AUDIT risk groups and chronic diseases using binary logistic regression analysis adjusted for age, BMI, economic activity, physical activ-

Table 2. Alcohol drinking and chronic disease risk^a

Disease	Current drinker vs. past drinker/non-drinker		
	OR	95% CI	P-value
Cancer	0.67	0.21–2.20	0.511
Heart disease	0.16	0.04–0.59	0.006*
Pneumonia	0.28	0.11–0.75	0.011*
Cerebrovascular disease	2.91	0.91–9.34	0.073
Diabetes	0.89	0.39–2.02	0.778
Liver disease	0.88	0.39–2.00	0.759
Hypertension	1.10	0.49–2.47	0.815
Kidney disease	0.49	0.18–1.34	0.166
Gout	0.81	0.18–3.56	0.779
Arthritis	3.08	1.06–8.96	0.039*

OR, odds ratio; CI, confidence interval.

^aReference group: past drinkers/non-drinkers; B and standard error values were omitted to improve the readability and clarity of the table.; Adjusted by age, body mass index, education level, economic activity, physical activity, regular diet habits, and smoking.

*P<0.05 was considered statistically significant.

Table 3. Prevalence of chronic diseases by AUDIT score 8 among men with vision disorders

Disease	AUDIT≥8	AUDIT<8	χ^2	P-value
Cancer	6 (5.4)	16 (15.1)	5.69	0.023*
Heart disease	12 (10.7)	14 (13.2)	0.32	0.677
Pneumonia	18 (16.1)	20 (18.9)	0.29	0.598
Cerebrovascular disease	12 (10.7)	17 (16.0)	1.33	0.319
Diabetes mellitus	37 (33.0)	40 (37.7)	0.52	0.482
Liver disease	32 (28.6)	46 (43.4)	5.20	0.024*
Hypertension	58 (51.8)	55 (51.9)	0.00	>0.99
Kidney disease	18 (16.1)	21 (19.8)	0.51	0.485
Gout	9 (8.0)	5 (5.7)	0.48	0.596
Osteoarthritis	25 (22.3)	18 (17.0)	0.98	0.395

Values are presented as number (%). Multiple responses were allowed for chronic disease items.

AUDIT, Alcohol Use Disorders Identification Test.

P-values were obtained using chi-square test unless otherwise indicated (*P<0.05).

ity, regular diet habits, and smoking status.

Among the diseases examined, only diabetes showed a statistically significant association with the high-risk drinking group (AUDIT≥16). Specifically, individuals with an AUDIT score ≥16 had a significantly higher odds of having diabetes (OR=9.00, 95% CI=1.68–48.14, P<0.05) compared to those with lower scores.

No significant associations were observed for other chronic diseases, including cancer, heart disease, liver disease, hypertension, kidney disease, gout, or osteoarthritis (P>0.05). Although cerebrovascular disease showed a relatively high OR (OR=12.25) in the high-risk drinking group, this result was not statistically significant due to the wide CI.

Table 4. ORs of chronic diseases by AUDIT risk levels

Disease	AUDIT≥8		AUDIT≥16	
	OR	95% CI	OR	95% CI
Cancer	1.26	0.40–4.00	1.68	0.25–11.24
Heart disease	2.07	0.66–6.57	6.86	0.68–69.00
Pneumonia	1.58	0.65–3.86	1.49	0.25–8.90
Cerebrovascular disease	0.43	0.16–1.21	12.25	0.66–228.57
Diabetes	0.62	0.27–1.33	9.00	1.68–48.14*
Liver disease	0.61	0.29–1.28	2.32	0.58–9.38
Hypertension	1.05	0.50–2.20	0.81	0.20–3.39
Kidney disease	2.40	0.89–6.50	1.10	0.21–5.70
Gout	1.38	0.35–5.37	0.16	0.02–1.67
Osteoarthritis	0.92	0.38–2.23	1.00	0.23–4.50

Binary logistic regression models were adjusted for age, body mass index, and economic activity status, physical activity, regular diet habits, smoking.

AUDIT, Alcohol Use Disorders Identification Test; CI, confidence interval; OR, odds ratio.

Statistical significance was set at *P<0.05.

These findings suggest that heavy alcohol drinking, as indicated by higher AUDIT scores, may be strongly associated with an increased risk of diabetes, while its relationship with other chronic diseases remains inconclusive.

DISCUSSION

This study was conducted to examine the Associations of Alcohol Drinking with Chronic Diseases among Korean Men with Severe Vision Disorders. In this study, current drinkers showed a lower prevalence of heart disease and pneumonia compared to past or non-drinkers, whereas the prevalence of arthritis was higher. These findings are more likely to reflect reverse causality, resulting from changes in drinking habits after disease diagnosis, rather than a simple causal relationship. In particular, the lower ORs observed for heart disease and pneumonia may be due to individuals who quit or reduced drinking after being diagnosed with chronic diseases being categorized into the past/non-drinker group.

On the other hand, the approximately three-fold higher prevalence of arthritis among current drinkers suggests that alcohol drinking may act as an aggravating factor for inflammatory responses or certain conditions such as gouty arthritis [17].

No significant differences were found for other diseases such as liver disease, diabetes, or hypertension, which may be due to a combination of factors including limited sample size, diversity of drinking patterns, and behavioral changes following disease diagnosis. These findings suggest that alcohol drinking should be understood not as a direct cause of chronic diseases, but

rather within the context of interactions between disease diagnosis and subsequent health behavior changes.

According to another study, past drinking among men with disabilities was associated with chronic diseases such as cerebrovascular and heart diseases [18], and similar results have been reported among elderly individuals with hypertension, where high-risk drinking was identified as a major factor contributing to health deterioration [12].

Past drinking experiences remain strong predictors of chronic diseases such as heart disease and chronic kidney disease, indicating accumulated health risks [19]. The apparent preventive effect of current drinking in this study may be related to behavioral changes following disease diagnosis [20], as individuals may have reduced or ceased alcohol drinking after being diagnosed with chronic conditions [21,22]. These findings highlight the long-term and cumulative impact of alcohol on chronic disease risk. The interpretation of the associations between past drinking and chronic diseases should consider the operational definition of past drinkers. In this study, past drinkers were defined as respondents who had consumed alcohol in the past but were not drinking at the time of the survey, without detailed information on the duration or cause of abstinence. Consequently, differences in the length or reason for quitting may have influenced the observed associations with specific chronic diseases such as heart or kidney disease.

This aligns with global evidence from the WHO and CDC, both of which identify alcohol as a major cause of non-communicable diseases [2-4]. Furthermore, these patterns suggest the possibility of reverse causality—where individuals reduce or stop drinking after being diagnosed with chronic diseases, either following medical advice or as part of self-directed health management. Similar trends have been observed in previous studies showing decreased alcohol drinking after diagnoses of cardiovascular disease, diabetes, or kidney disease. Data from the Korea Health Panel also confirmed this reverse causality, showing that adults reduced alcohol intake after being diagnosed with chronic diseases [13].

Consistent with national and international studies individuals with vision disorders demonstrate higher rates of hazardous drinking but lower participation in smoking cessation or alcohol reduction programs. Barriers such as limited access to health information, restricted opportunities for physical activity, and inadequate community resources contribute to structural health inequities. Evidence from the United States also supports these findings, showing that older adults with vision disorders have

higher prevalence of chronic conditions and greater functional limitations compared with non-impaired peers [23]. Large-scale comparative studies have likewise reported that individuals with vision disorders have significantly higher prevalence of hypertension, heart disease, stroke, arthritis, and asthma [23]. Population-based analyses in Korea further demonstrated that people with vision disorders experience substantially higher rates of stroke, cardiovascular disease, hypertension, and diabetes than the general population [24]. These results emphasize that alcohol-related risks identified in this study must be understood within the broader context of chronic disease disparities associated with vision disorders. Additional analyses of older adults with diabetes have also shown that those who with vision disorders are at heightened risk of malnutrition and chronic disease complications [14].

This study underscores the importance of addressing alcohol use not only as an individual behavior but also within broader social and policy contexts. Expanding access to health promotion resources, enhancing preventive screening, and providing disability-inclusive healthcare environments are essential. Evidence suggests that disability support services can significantly improve healthcare utilization among people with disabilities, including those who with vision disorders [4]. Systematic reviews also indicate that tailored chronic disease interventions—such as accessible health education materials and integrated care programs—can reduce disparities and improve outcomes [25]. For visually impaired individuals, future interventions should include targeted alcohol prevention and education initiatives. These may involve Braille and audio materials, accessible mobile health applications, peer-support groups within disability communities, and collaboration with local welfare centers to ensure sustained participation. Such strategies would not only improve knowledge and awareness but also provide practical support for adopting and maintaining healthier behaviors. This approach is consistent with primary care-based interventions, where alcohol reduction programs embedded within broader lifestyle modifications have been shown to improve health outcomes [26].

Limitations of this study include reliance on self-reported chronic disease diagnoses, the cross-sectional design that precludes causal inference, the absence of a non-disabled control group and the restriction of the sample to men only. The focus on men reflected both their higher prevalence of chronic diseases in older age groups and the feasibility of recruitment through vocational training and welfare centers, but it limits

the generalizability of findings to women with vision disorders. Furthermore, national surveillance reports continue to document persistent health inequities among people with disabilities in Korea, reinforcing the need for policy-level interventions [11-13]. Despite these limitations, this study contributes novel empirical evidence on the intersection of alcohol use and chronic diseases in a vulnerable population. Unlike earlier research that primarily addressed general health behaviors or healthcare access among people with disabilities, this study is the first to specifically analyze alcohol use patterns in relation to chronic disease diagnoses among older men with severe vision disorders, providing unique evidence to guide tailored public health interventions.

Summary

This study analyzed associations between alcohol drinking behaviors and chronic disease diagnoses among severe vision disorders men aged 50 years or older. Past drinkers/non-drinkers showed a significantly lower odds of heart disease and pneumonia. In contrast, arthritis showed a significantly higher risk among current drinkers. Hazardous drinkers (AUDIT-K score ≥ 8) showed a higher prevalence of cancer and liver disease compared with non-hazardous drinkers. Hazardous drinking was associated with 9.00-fold increased risk of diabetes. These findings highlight the need for tailored alcohol reduction and health promotion interventions for individuals with vision disorders, emphasizing integrated approaches that extend beyond individual behavior to social and policy contexts.

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AUTHOR CONTRIBUTIONS

Dr. Geumseon LEE had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. All authors reviewed this manuscript and agreed to individual contributions.

Conceptualization: SYW, SK, JL, and GL. Data curation: SK, MY, and GL. Formal analysis: SK and MY. Software, Supervi-

sion: JL, MY, and GL. Writing—original draft: SYW and GL. Writing—review & editing: all authors.

CONFLICTS OF INTEREST

No existing or potential conflict of interest relevant to this article was reported.

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None.

DATA AVAILABILITY

The data presented in this study are available upon reasonable request from the corresponding author.

REFERENCES

1. Ministry of Health and Welfare, Korea Institute for Health and Social Affairs. Survey on persons with disabilities 2020. Ministry of Health and Welfare; 2020 Dec. Report No. 11-1352000-000568-12.
2. World Health Organization (WHO). Global status report on alcohol and health 2018. WHO; 2018.
3. World Health Organization (WHO). Disability and health: fact sheet [Internet]. WHO; 2023 Mar 7 [cited 2025 Sep 29]. Available from: <https://www.who.int/news-room/fact-sheets/detail/disability-and-health>
4. Centers for Disease Control and Prevention (CDC). Disability and health data system (DHDS). CDC; 2020.
5. Jeon B, Koo H, Choi HK, Han E. The impact of visual impairment on healthcare use among four medical institution types: a nationwide retrospective cohort study in Korea. *Yonsei Med J* 2023;64(7):455-62.
6. Cho MJ, Seong SJ, Park JE, Chung IW, Lee YM, Bae A, et al. Prevalence and correlates of DSM-IV mental disorders in South Korean adults: the Korean Epidemiologic Catchment Area Study 2011. *Psychiatry Investig* 2015;12(2):164-70.
7. Na KI, Lee WJ, Kim YK. Trends in the prevalence of blindness and correlation with health status in Korean adults: a 10-year nationwide population-based study. *J Korean Med Sci* 2023;38(28):e213.
8. Crews JE, Chou CF, Zhang X, Zack MM, Saaddine JB. Health-related quality of life among people aged ≥ 65 years with self-re-

- ported visual impairment: findings from the 2006-2010 behavioral risk factor surveillance system. *Ophthalmic Epidemiol* 2014;21(5):287-96.
9. Oh SS, Lee S, Jang SI, Park EC. Chronic alcoholism and all-cause mortality among disabled individuals: findings from the Korea National Health Insurance Service-National Sample Cohort. *Alcohol*. 2020;89:57-62.
 10. Lee HK. Epidemiology of alcohol use disorders and alcohol policy. *J Korean Neuropsychiatr Assoc* 2019;58(3):152-8.
 11. National Rehabilitation Center. 2018 Survey on health behaviors of people with disabilities. National Rehabilitation Center; 2018.
 12. National Center for Mental Health. Indicators of addiction in Korea 2024. Ministry of Health and Welfare; 2024.
 13. Park E. Changes in health behaviors as examined by the Korean health panel (2010-2018): smoking, drinking, and physical activity in adults and the elderly [Internet]. Korea Institute for Health and Social Affairs; 2021 Aug 2 [cited 2025 Sep 29]. Available from: <https://repository.kihasa.re.kr/handle/201002/38120>
 14. Yang E, Lee KH. Association between visual impairment and nutritional risk among older adults with diabetes: a population-based cross-sectional study. *J Korean Acad Nurs* 2023; 53(2):167-76.
 15. Saunders JB, Aasland OG, Babor TF, de la Fuente JR, Grant M. Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption: II. *Addiction* 1993;88(6):791-804.
 16. Lee BO, Lee CH, Lee PG, Choi MJ, Namkoong K. Development of Korean version of Alcohol Use Disorders Identification Test (AUDIT-K): its reliability and validity. *J Korean Acad Addict Psychiatry* 2000;4(2):83-92.
 17. Feng Y, Sun H, Zhu R, Tao J, Su R, Sun Y, et al. Effects of alcohol on the symptoms of gouty arthritis and taxonomic structure of gut microbiota in C57BL/6 mice. *Front Microbiol* 2023;14:1257701.
 18. Kim JY, Kang MW, Seo WY, Lee JW. Chronic diseases, health behaviors, and mortality in persons with disabilities: an analysis of the National Health Insurance Service-Health Screening (NHIS-HEALS) database. *Health Soc Welf Rev* 2020;40(2):121-50.
 19. Tanaka A, Yamaguchi M, Ishimoto T, Katsuno T, Nobata H, Iwagaitu S, et al. Association of alcohol consumption with the incidence of proteinuria and chronic kidney disease: a retrospective cohort study in Japan. *Nutr J* 2022;21(1):31.
 20. Jeon YJ, Pyo J, Park YK, Ock M. Health behaviors in major chronic diseases patients: trends and regional variations analysis, 2008-2017, Korea. *BMC Public Health* 2020;20(1):1813.
 21. Kang DO, Lee DI, Roh SY, Na JO, Choi CU, Kim JW, et al. Reduced alcohol consumption and major adverse cardiovascular events among individuals with previously high alcohol consumption. *JAMA Netw Open* 2024;7(3):e244013.
 22. Hu Y, Chen Q, Zhang B. Effects of chronic disease diagnoses on alcohol consumption among elderly individuals: longitudinal evidence from China. *BMJ Open* 2022;12(10):e062920.
 23. Crews JE, Campbell VA. Health conditions, activity limitations, and participation restrictions among older people with visual impairments. *J Vis Impair Blind* 2001;95(8):453-67.
 24. Kim KN, Park SJ, Kim W, Joo J, Kim H, Kim KH, et al. Modification of the association between visual impairment and mortality by physical activity: a cohort study among the Korean National Health Examinees. *Int J Environ Res Public Health* 2019;16(22):4386.
 25. Kim HJ, Chang SJ, Yang E, Jeong HN. Chronic disease interventions for people with visual impairment: a systematic review. *Appl Nurs Res* 2021;60:151446.
 26. Ashenden R, Silagy C, Weller D. A systematic review of the effectiveness of promoting lifestyle change in general practice. *Fam Pract* 1997;14(2):160-76.