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Impact of Urbanization and Sunlight Exposure on Cataract Incidence

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Abstract: The impact of urbanization on cataract incidence is still inconclusive. This study aimed to examine the association of urbanization and sunlight exposure with cataract incidence using a nationwide population-based database in Taiwan. The researchers used data retrieved from the Taiwan Longitudinal Health Insurance Database from 2001 to 2010 (LHID2010). The LHID2010 consists of medical claims data for reimbursement for 1 million individuals randomly selected from all enrollees (N = 23.25 million) in the Taiwan National Health Insurance (NHI) program in 2010. For adults aged over 40, we identified a total of 3080 people diagnosed with senile cataracts (ICD-9:360) and 393,241 people without senile cataracts in the LHID2010. In addition, sunlight exposure data between 2001 and 2011 were obtained from 28 meteorological stations of the Taiwan Central Weather Bureau. Logistic regression was performed to test the hypothesis. When controlled for the confounding factors, such as demographic factors, comorbidities, and sunlight exposure, the logistic regression results showed that those living in highly urbanized areas are more likely to suffer from senile cataracts ($p < 0.001$).

Keywords: urbanization; cataract incidence; sunlight exposure

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1. Introduction

Cataract is a very common eye disease among older adults, which seriously impairs their quality of life. From 2005 to 2014, evidence from the Global Burden of Disease Study (GBD) showed that cataract is the leading cause of blindness and the second cause of moderate and severe vision impairment [1].

In 2010, according to GBD and World Health Organization (WHO) data, cataracts accounted for 33% and 48% of global visual impairment, respectively [2]. The GBD is considered a more accurate estimate due to its comprehensive literature search methodology. In 2010, the GBD showed that the number of cataract blind people is 10.8 million (around 33% of blind people worldwide) [3]. Additionally, data from the WHO has estimated that this number will increase to 40 million in 2025 due to the aging populations with greater life expectancies [2]. In 2020, cataracts remained the first or second cause of vision loss in all world regions [4]. Therefore, studies of the factors associated with cataracts are critical.

Previous studies have shown that many factors may affect cataract incidence, such as sunlight exposure, urbanization, age, and comorbidities. In addition, comorbidities may cause cataracts, including hypertension, diabetes, chronic kidney disease, etc. However, the association between the incidence of cataracts and urbanization levels is still inconclusive. Thus, it is valuable to use a population-based database to study the association between the incidence of cataracts and levels of urbanization.

1.1. Aging

Research results demonstrated that aging is a significant risk factor for cataracts from a population-based study in Sweden. [5] The results showed that every year of advancing age increased the risk of cataracts by 16% (OR 1.16; 95% CI 1.10–1.23). In this study, it was found that females suffer a 52% higher risk than males.

Another cohort study also indicated that increasing age is associated with an increased risk of all types of cataracts and cataract surgery [6].

1.2. Comorbidities

The Prevalence of visual impairment and ocular disease, including cataracts, were significantly higher in participants with chronic kidney disease (36.1% and 84.7%) than in those without (12.9% and 54.3%, both $p < 0.001$). [7]

According to a study that included 812 consecutive patients undergoing unilateral, uneventful cataract surgery in Greece from 2018 to 2019, hypertension is the prominent risk factor in cataract patients. [8]

Several studies have indicated that cataract formation occurs at an earlier age and more often in diabetic patients than in nondiabetic patients. For example, some studies have demonstrated that cataracts are three to four times more prevalent in patients with diabetes under the age of 65 [9–12].

1.3. Sunlight Exposure

Most of the previous studies have demonstrated that sunlight exposure is a significant risk factor for cataracts. For examples, a population-based cross-sectional study on the prevalence of cataract and its association with sun exposure in three different geographically diverse populations of India during 2010–2016 has reported that cataract is associated with an increased sun exposure level [13].

Another case-control study in Australia between 1992 and 1996 found a strong positive association of occupational sun exposure with nuclear cataracts (odds ratio = 5.9; 95% confidence interval = 2.1–17.1) [14].

However, results indicated no association between years of outdoor exposure and the risk of cataracts in a frequency-matched case-control study of 343 cases and 334 controls in Spain from 1994 to 1995 [15].

1.4. Urbanization

Whether urbanization has impacted the incidence of cataracts is still inconclusive. A study examining the prevalence of cataracts between 2001 and 2013 in Taiwan reported that participants living in highly urbanized areas were more likely to have cataracts than those living in other levels of urbanization [16]. The result is similar to findings reported by Xu et al. [17].

However, several studies have indicated that people living in rural areas have a higher possibility of developing cataracts. A study reported that the prevalence of cataracts in rural areas is higher than that of urban areas in Southern India [18]. Nonetheless, a study with rural and urban samples in India did not report any difference in the prevalence of cataracts among the rural and urban populations [19]. Therefore, we may conclude that the association between the prevalence of cataracts and urbanization levels is still inconclusive.

2. Materials and Methods

The primary data source of this study was the Taiwan National Health Insurance Research Database (NHIRD). We chose the Longitudinal Health Insurance Database 2010 (LHID2010), a subset of NHIRD data, representing 1,000,000 randomly sampled beneficiaries insured in 2010 from National Health Insurance (NHI). Statisticians have confirmed that there is no significant difference in age, gender, or healthcare costs from the entire population, which consists of all beneficiaries under the NHI program.

This research focused on senile cataract (ICD-9 code: 3661, including ICD-9 codes 36610–36619) but excluded drug-induced cataract, congenital cataract, metabolic cataract, complicated cataract, and traumatic cataract. Therefore, the case group would be age 40 and above and diagnosed as senile cataract but would exclude some specific diagnoses mentioned above; the control group would be age 40 and above without a diagnosis of senile cataract.

There were a total of 1,094,727 insured in the LHID2010 database. After excluding those aged 39 and below, there were a total of 396,321 insured included in our analysis. Among those included in the research, 3080 were diagnosed as senile cataract in the case group, 393,241 were in the control group. In terms of sunlight exposure duration, we obtained the data from 28 meteorological stations across Taiwan. We collected the actual daily sunny hours for a consecutive 132 months from January of 2001 to December of 2011 and then calculated average monthly sunlight hours for each location.

As to urbanization levels in Taiwan, the 368 townships in Taiwan were initially classified into seven urbanization levels, according to research by the Taiwan National Health Research Institutes. The levels of urbanization were determined by several factors, including population density, population ratio of the elderly (over 65), population ratio of farmers, and physicians per 100,000 populations, etc. The composite indicator of urbanization in Taiwan was established using the above factors through cluster analysis. Therefore, it is not easy to present the accurate range of each factor. However, Table 1 shows the rough range of major factors in establishing levels of urbanization in Taiwan [20].

Table 1. Major factors measuring urbanization in Taiwan and their rough ranges [20].

	Population Density (per KM^2)	Population Ratio of Elderly (over 65)	Population Ratio of Farmers	Physicians per 100,000 Populations
Highly urbanized	23,481–26,101	16.52–21.73%	0.15–0.85%	217–528
High urbanized	1158–2362	12.47–15.47%	8.16–13.13%	243–345
Medium urbanized	1008–2583	12.97–14.31%	10.58–10.88%	158–230
Low urbanized	452–952	16.51–17.49%	10.82–19.41%	124–137
Remote areas	5–11	9.44–18.99%	31.36–32.13%	24–83

To simplify the analysis, we modified and reclassified the seven urbanization stratifications of Taiwan townships into five levels in this study: highly urbanized, high urbanized, medium urbanized, low urbanized, and remote areas.

We performed a logistic regression controlled by confounding variables described above to see the impact of different urbanization levels on the incidence of cataracts (Figure 1).

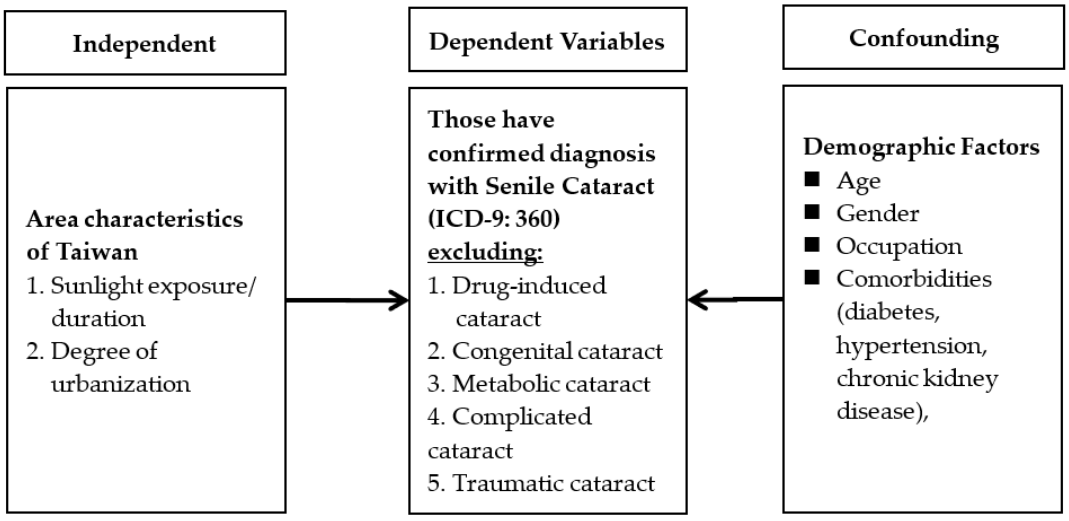

Figure 1. Conceptual Framework.

3. Results

Table 2 reports the characteristics of the 396,321 insured included in the analysis. Among them, 48.85% were male, 51.15% were female. Most of them were age between 40 and 49 (40.76%). Those who worked in the industry were the most common occupation (34.64%) in this study. In terms of residence locations, the majority included in the analysis live in high and medium urbanized areas (57.91%).

Table 2. Descriptive Analysis (N = 396,321).

Variables	Senile Cataract (N = 3080)		Without Senile Cataract (N = 393,241)	
	N	%	N	%
Gender				
Male	1455	0.37%	192,138	48.48%
Female	1625	0.41%	201,103	50.74%
Age				
40–49	80	0.02%	161,468	40.74%
50–59	325	0.08%	95,131	24.00%
60–69	1084	0.27%	72,006	18.17%
70–79	1256	0.32%	48,570	12.26%
80+	335	0.08%	16,066	4.05%
Occupation				
School teachers/staff	246	0.06%	23,082	5.82%
Industry employees	705	0.18%	136,564	34.46%
Government employee	47	0.01%	9379	2.37%
Self-employed	0	0.00%	4	0.00%
Vocational union staff	351	0.09%	86,437	21.81%
Foreign seamen	0	0.00%	10	0.00%
Farmers	854	0.22%	74,850	18.89%
Fishermen/Seamen	68	0.02%	8029	2.03%
Dependents-deceased public servants	6	0.00%	689	0.17%
Low income	24	0.01%	2535	0.64%
Veterans	10	0.00%	823	0.21%
Others (e.g., religious workers, etc.)	766	0.19%	50,738	12.81%
Urbanization				
Highly urbanized	904	0.23%	116,509	29.40%
High urbanized	840	0.21%	111,235	28.07%
Medium urbanized	398	0.10%	59,742	15.07%
Low urbanized	459	0.12%	56,903	14.36%
Remote areas	479	0.12%	48,852	12.33%

Results of the logistic regression (Table 3) shows that when controlled for confounding factors, such as demographics (age, gender, occupation) and presence of comorbidities (such as diabetes, hypertension, chronic kidney disease), those who live in highly urbanized areas or expose for a longer duration of sunlight exposure are more likely to suffer from senile cataract ($p < 0.001$).

The analysis also demonstrates that, compared to the age group between 40 and 49, higher ages were associated with a significantly higher incidence of senile cataracts. Similarly, being female, a longer duration of sunlight exposure, and the presence of comorbidities (such as diabetes, CKD, and hypertension) were all associated with a significantly higher incidence of senile cataracts.

In terms of urbanization of residents' living areas, compared to those who live in medium urbanized areas, those who live in high urbanized areas are associated with a significantly higher incidence of senile cataract while those who live in less and low urbanized areas experience a significantly lower incidence of senile cataract.

Table 3. Results of Logistic Regression (N = 396,321).

Variables	DF	Parameter	SD	*p*-Value
Intercept	1	−8.15	0.17	<0.001 ***
Urbanization (Ref: Remote areas)				
Highly urbanized	1	0.35	0.07	<0.001 ***
High urbanized	1	0.20	0.07	<0.01 **
Medium urbanized	1	−0.07	0.07	0.36
Low urbanized	1	−0.05	0.07	0.42
Age (Ref: 40–49 Years)				
50–59	1	1.98	0.13	<0.001 ***
60–69	1	3.53	0.12	<0.001 ***
70–79	1	4.08	0.12	<0.001 ***
80 and above	1	3.82	0.13	<0.001 ***
Gender (Ref: Females)	1	−0.15	0.04	<0.001 ***
Occupation (Ref: Farmers)				
School teachers/staff	1	−0.08	0.07	0.24
Industry employees	1	0.27	0.08	<0.001 ***
Government employee	1	−0.06	0.16	0.77
Self-employed	1	−6.29	265.9	0.98
Vocational union staff	1	−0.19	0.08	<0.01 **
Foreign seamen	1	−6.70	120.1	0.96
Fishermen/Seamen	1	0.46	0.13	<0.001 ***
Dependents-deceased public servants	1	0.24	0.42	0.56
Low income	1	−0.10	0.21	0.64
Veterans	1	−0.36	0.32	0.26
Others (e.g., religious people, etc.)	1	0.36	0.06	<0.001 ***
Duration of Sunlight Exposure	1	0.003	0.00	<0.001 ***
Comorbidities				
Diabetes	1	0.98	0.14	<0.001 ***
Chronic kidney disease	1	2.55	1.00	<0.05 *
Hypertension	1	4.78	0.50	<0.001 ***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 4 further demonstrates the odds ratios of different levels of urbanization, compared to remote areas, on the incidence of senile cataracts. For example, the OR of highly urbanized areas over the remote areas is 1.41, which means those living in highly urbanized areas have a 1.41 times higher chance of developing a senile cataract than those living in remote areas.

Table 4. Urbanization and Incidence of Cataract (N = 396,321).

Variables	Parameters	Odds Ratio (OR)	*p*-Value
Urbanization (Ref: Remote areas)			
Highly urbanized	0.35	1.41	<0.001 ***
High urbanized	0.20	1.22	<0.01 **
Medium urbanized	−0.07	0.94	0.36
Low urbanized	−0.05	0.95	0.42

** $p < 0.01$, *** $p < 0.001$.

4. Discussion

The results of our study reveal that urbanization is a critical factor for the incidence of senile cataracts. The highest and second highest urbanized areas ("highly urbanized" and "high urbanized" areas) have 1.41 times and 1.22 times higher risk of developing senile cataracts than those living in remote areas. Nonetheless, the association between urbanization and the incidence of senile cataracts is not significant for those who live in medium and low urbanized areas.

Our study result is similar to a study examining the prevalence of cataracts in Taiwan between 2001 and 2013 and concluded that those living in highly urbanized areas were

more likely to have cataracts than those living in other levels of urbanization [16]. Our finding is also similar to the result of a study from China [17]. However, two studies from India reported different results from our research, indicating either significantly higher cataract incidence in rural areas or no difference in cataract incidence between urban or rural areas [18,19].

Although it seems that whether urbanization levels will impact the incidence of cataracts is still controversial, study results from Taiwan are consistent. They concluded that higher urbanization is a risk factor for senile cataracts. Therefore, it is valuable for academia to devote to more studies focusing on the impact of urbanization on the incidence of cataracts.

Our study result is consistent with many previous studies regarding the association of sunlight exposure and the incidence of cataracts [13–15]. This result demonstrates the importance of protecting people's eyes from direct sunlight exposure, especially for those who need to work under sunlight exposure, such as farmers, fishermen, construction workers, etc.

Age and comorbidities are confounding variables in this study. However, the results are consistent with former studies. Higher age has a significantly higher risk of developing senile cataracts. In addition, those people with certain comorbidities (diabetes, chronic kidney disease, and hypertension) are associated with significantly higher incidences of senile cataracts.

Our study has several limitations. First, we used claims data from the Taiwan National Health Insurance (NHI). Therefore, some socioeconomic variables, such as occupations and living areas, are inference from the Taiwan NHI insured's data. However, a Taiwanese study indicated that the validity is acceptable when using the Taiwan NHI data to construct socioeconomic variables [21]. Second, in terms of the duration of sunlight exposure, we applied the actual daily sunny hours data from the meteorological stations closed to the insured as the proxy of the duration of sunlight exposure. Thus, we did not directly measure the sunlight exposure of each insured. Therefore, the measurement of sunlight exposure would be a limitation of this study. Finally, in this study, we did not include some other variables that may impact developing senile cataracts, such as certain medications. However, we have tried to includes as many confounding variables as in this research.

5. Conclusions

Compared to other similar studies with small sample sizes, the most significant advantage of our research is that we used the Taiwan NHI claim database (LHID2010), including a 1,000,000 insured cohort for 10 years, which well-represented the population of 23.5 million in Taiwan,

Our study concludes that, after controlling some essential confounding variables, such as demographics (age, gender, occupation) and comorbidities (such as diabetes, hypertension, chronic kidney disease), a higher degree of urbanization and more prolonged sunlight exposure significantly impact developing senile cataracts. Therefore, unlike some other studies' results, the results from our study did not support the negative association between urbanization and the development of cataracts.

Previous studies have confirmed that the urban landscape's natural settings, such as green spaces and vegetation, positively affect health [22,23]. The major limitation of our study was the lack of some spatial or ecological variables, such as environmental greenness, in the analytical model. We suggest that future researchers adopt Geospatial Information Technology and use the Normalized Difference Vegetation Index to measure the environmental greenness and include it in the analysis. Suppose future studies prove that environmental greenness is a profound factor of urbanization related to cataract development; in that case, we can suggest that the government adopt policies to enhance the city's afforestation and improve people's health.

According to previous studies, sufficient intake of Vitamin C, Lutein/Zeaxanthin, B vitamins, Omega-3 fatty acids, multivitamins, etc., can decrease the risk of developing

cataracts [24,25]. Therefore, the absence of participants' nutritional status is the second limitation of this study. If possible, we suggest that future studies include participants' nutritional status as a confounder in the analysis.

Additionally, our study also demonstrates the importance of protecting people's eyes from direct sunlight exposure, especially for those who have to work under sunlight for an extended period, to prevent the development of senile cataracts. Therefore, the government should also provide health education and promote healthy behavior, such as wearing sunglasses or a hat under the sunlight to improve eye health.

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Informed Consent Statement: This study used the administrative database for analysis, so the informed consent was not required.

Data Availability Statement: The National Health Insurance Research Database, which has been transferred to the Health and Welfare Data Science Center (HWDC). Interested researchers can otain the data through formal application to the HWDC, Department of Statistics, Ministry of Health and Welfare, Taiwan (https://dep.mohw.gov.tw/dos/cp-5119-59201-113.html, accessed on 2 September 2021).

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References

1. Wang, W.; Yan, W.; Fotis, K.; Prasad, N.M.; Lansingh, V.C.; Taylor, H.R.; Finger, R.P.; Facciolo, D.; He, M. Cataract Surgical Rate and Socioeconomics: A Global Study. *Investig. Ophthalmol. Vis. Sci.* **2016**, *57*, 5872–5881. [CrossRef] [PubMed]
2. Pascolini, D.; Mariotti, S.P. Global estimates of visual impairment: 2010. *Br. J. Ophthalmol.* **2012**, *96*, 614–618. [CrossRef] [PubMed]
3. Khairallah, M.; Kahloun, R.; Bourne, R.; Limburg, H.; Flaxman, S.R.; Jonas, J.B.; Keeffe, J.; Leasher, J.; Naidoo, K.; Pesudovs, K.; et al. Number of people blind or visually impaired by cataract worldwide and in world regions, 1990 to 2010. *Investig. Ophthalmol Vis. Sci.* **2015**, *56*, 6762–6769. [CrossRef] [PubMed]
4. GBD 2019 Blindness and Vision Impairment Collaborators; Vision Loss Expert Group of the Global Burden of Disease Study. Causes of blindness and vision impairment in 2020 and trends over 30 years, and prevalence of avoidable blindness in relation to VISION 2020: The Right to Sight: An analysis for the Global Burden of Disease Study. *Lancet Glob. Health* **2021**, *9*, e144–e160. [CrossRef]
5. Hugosson, M.; Ekström, C. Prevalence and risk factors for age-related cataract in Sweden. *Upsala J. Med. Sci.* **2020**, *125*, 311–315. [CrossRef]
6. Chang, J.R.; Koo, E.; Agrón, E.; Hallak, J.; Clemons, T.; Azar, D.; Sperduto, R.D.; Ferris, F.; Chew, E.Y. Risk factors associated with incident cataracts and cataract surgery in the Age-related Eye Disease Study (AREDS): AREDS report number 32. *Ophthalmology* **2011**, *118*, 2113–2119. [CrossRef]
7. Wong, C.W.; Lamoureux, E.L.; Cheng, C.-Y.; Cheung, C.M.G.; Tai, E.S.; Wong, T.Y.; Sabanayagam, C. Increased Burden of Vision Impairment and Eye Diseases in Persons with Chronic Kidney Disease—A Population-Based Study. *EBioMedicine* **2016**, *5*, 193–197. [CrossRef]
8. Mylona, I.; Dermenoudi, M.; Ziakas, N.; Tsinopoulos, I. Hypertension is the Prominent Risk Factor in Cataract Patients. *Medicina* **2019**, *55*, 430. [CrossRef] [PubMed]
9. Klein, B.E.; Klein, R.; Moss, S.E. Prevalence of cataracts in a population-based study of persons with diabetes mellitus. *Ophthalmology* **1985**, *92*, 1191–1196. [CrossRef]
10. Nielsen, N.V.; Vinding, T. The prevalence of cataract in insulin-dependent and non-insulin-dependent-diabetes mellitus. *Acta Ophthalmol.* **1984**, *62*, 595–602. [CrossRef]
11. Javadi, M.A.; Zarei-Ghanavati, S. Cataracts in diabetic patients: A review article. *J. Ophthalmic. Vis. Res.* **2008**, *3*, 52–65.
12. Ederer, F.; Hiller, R.; Taylor, H.R. Senile lens changes and diabetes in two population studies. *Am. J. Ophthalmol.* **1981**, *91*, 381–395. [CrossRef]
13. Vashist, P.; Tandon, R.; Murthy, G.V.S.; Barua, C.K.; Deka, D.; Singh, S.; ICMR-EYE SEE Study Group. Association of cataract and sun exposure in geographically diverse populations of India: The CASE study. First Report of the ICMR-EYE SEE Study Group. *PLoS ONE* **2020**, *15*, e0227868. [CrossRef]

14. Neale, R.E.; Purdie, J.L.; Hirst, L.W.; Green, A.C. Sun exposure as a risk factor for nuclear cataract. *Epidemiology* **2003**, *14*, 707–712. [CrossRef]
15. Pastor-Valero, M.; Fletcher, A.E.; de Stavola, B.L.; Chaqués-Alepúz, V. Years of sunlight exposure and cataract: A case-control study in a Mediterranean population. *BMC Ophthalmol.* **2007**, *7*, 18. [CrossRef] [PubMed]
16. Shih, Y.H.; Chang, H.Y.; Lu, M.I.; Hurng, B.S. Time trend of prevalence of self-reported cataract and its association with prolonged sitting in Taiwan from 2001 and 2013. *BMC Ophthalmol.* **2014**, *14*, 128. [CrossRef] [PubMed]
17. Xu, L.; Cui, T.; Zhang, S.; Sun, B.; Zheng, Y.; Hu, A.; Li, J.; Ma, K.; Jonas, J.B. Prevalence and risk factors of lens opacities in urban and rural Chinese in Beijing. *Ophthalmology* **2006**, *113*, 747–755. [CrossRef] [PubMed]
18. Raman, R.; Singh, S.; Pardhan, S.; Kulothungan, V.; Swaminathan, G.; Ravichandran, J.S.; Ganesan, S.; Sharma, T. The prevalence and risk factors for cataract in rural and urban India. *Indian J. Ophthalmol.* **2019**, *67*, 477–483. [CrossRef]
19. Vashist, P.; Talwar, B.; Gogoi, M.; Maraini, G.; Camparini, M.; Ravindran, R.D.; Murthy, G.V.; Fitzpatrick, K.E.; John, N.; Chakravarthy, U.; et al. Prevalence of cataract in an older population in India: The India study of age-related eye disease. *Ophthalmology* **2011**, *118*, 272–278.e82. [CrossRef]
20. Liu, C.Y.; Hung, Y.T.; Chuang, Y.L.; Chen, Y.J.; Weng, W.S.; Liu, J.S.; Liang, K.Y. Incorporating development stratification of Taiwan townships into sampling design of large scale health interview survey. *J. Health Manag.* **2006**, *4*, 1–22.
21. Lien, H.M. How to construct social-economic variables from National Health Insurance Data. *J. Soc. Sci. Philos* **2011**, *23*, 371–398. [CrossRef]
22. Pratiwi, P.I.; Xiang, Q.; Furuya, K. Physiological and Psychological Effects of Viewing Urban Parks in Different Seasons in Adults. *Int J. Environ. Res. Public Health* **2019**, *16*, 4279. [CrossRef] [PubMed]
23. Beil, K.; Hanes, D. The influence of urban natural and built environments on physiological and psychological measures of stress—A pilot study. *Int J. Environ. Res. Public Health* **2013**, *10*, 1250–1267. [CrossRef] [PubMed]
24. Weikel, K.A.; Garber, C.; Baburins, A.; Taylor, A. Nutritional modulation of cataract. *Nutr. Rev.* **2014**, *72*, 30–47. [CrossRef]
25. Lawrenson, J.G.; Downie, L.E. Nutrition and Eye Health. *Nutrients* **2019**, *11*, 2123. [CrossRef] [PubMed]