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Abstract: This study aims to analyze the ambulatory visit frequency and medical expenditures of the general elderly population versus the elderly with intellectual disabilities in Taiwan, while examining the effects of age, gender, urbanization and copayment status on ambulatory utilization. A cross-sectional study was conducted to analyze data from 103,183 national health insurance claimants aged 65 or older. A total of 1,469 had a principal diagnosis of mental retardation (intellectual disability) and claimed medical outpatient services in 2007. The average number of ambulatory visits was 30.1 ± 23.1 , which is much higher than in the United States and other developed countries, and the mean annual visits of the elderly with intellectual disabilities was significantly higher than the general population in Taiwan (35.2 ± 28.7 vs. 30.0 ± 23.1). Age and copayment status affected outpatient visit frequency. The mean medical expenditure per visit and the mean annual outpatient cost were $1,146.5 \pm 4,497.7$ NT\$ and $34,533.7 \pm 115,891.7$ NT\$, respectively. Male beneficiaries tended to have higher average annual medical expenses and mean medical expenses per visit than female beneficiaries. The three most frequent principal diagnoses at ambulatory visits were circulatory system diseases, musculoskeletal system and connective tissue diseases and digestive system diseases. We conclude that the elderly with intellectual disabilities had higher demand than the general population for healthcare services, and the NHI program lowers the barrier to care for populations with special needs.

6 March, 2012

Johnny L. Matson, Ph.D.
Editor-in-Chief, Research in Developmental Disabilities
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Dear Professor Matson:

We are very pleased to submit the manuscript 'Comparison of outpatient services between elderly people with intellectual disabilities and the general elderly population in Taiwan' to RIDD. The present manuscript has been English edited by Elsevier Language Webshop thoroughly, and it has not been previously published and has not been submitted elsewhere currently. We are requesting review and possible publish this manuscript on your excellent journal, and look forward to your good news.

Yours truly

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Research highlights:

► To analyze the ambulatory visit frequency and medical expenditure of general population and ID elderly in Taiwan. ► The annual ambulatory visits and medical expenditure in people with ID are much higher than the general population ► The elderly people with ID had higher demand than general population in healthcare service, the NHI program should lower the barrier for population with special needs.

Comparison of outpatient services between elderly people with intellectual disabilities and the general elderly population in Taiwan

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Abstract

This study aims to analyze the ambulatory visit frequency and medical expenditures of the general elderly population versus the elderly with intellectual disabilities in Taiwan, while examining the effects of age, gender, urbanization and copayment status on ambulatory utilization. A cross-sectional study was conducted to analyze data from 103,183 national health insurance claimants aged 65 or older. A total of 1,469 had a principal diagnosis of mental retardation (intellectual disability) and claimed medical outpatient services in 2007. The average number of ambulatory visits was 30.1 ± 23.1 , which is much higher than in the United States and other developed countries, and the mean annual visits of the elderly with intellectual disabilities was significantly higher than the general population in Taiwan (35.2 ± 28.7 vs. 30.0 ± 23.1). Age and copayment status affected outpatient visit frequency. The mean medical expenditure per visit and the mean annual outpatient cost were $1,146.5 \pm 4,497.7$ NT\$ and $34,533.7 \pm 115,891.7$ NT\$, respectively. Male beneficiaries tended to have higher average annual medical expenses and mean medical expenses per visit than female beneficiaries. The three most frequent principal diagnoses at ambulatory visits were circulatory system diseases, musculoskeletal system and connective tissue diseases and digestive system diseases. We conclude that the elderly with intellectual disabilities had higher demand than the general population for healthcare services, and the NHI program lowers the barrier to care for populations with special needs.

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1. Introduction

Several studies have confirmed that individuals with intellectual disabilities (ID) have poorer health than their non-disabled peers, and suffer from conditions such as psychiatric disorders, seizure disorders, dental problems, gastrointestinal disorders, osteoporosis and *Helicobacter pylori* (Beange & Lennox, 1998; Beange, McElduff, & Baker, 1995; Böhmer et al., 1997; Center, Beange, & McElduff, 1998; Sutherland, Couch, & Iacono, 2002). The US Surgeon General's report concluded that people with ID have a greater variety of health care needs compared to those of the same age and gender in the general population (US Department of Health and Social Services, 2002). In the Netherlands, adults with ID were found to be 2.5 times more likely to be diagnosed with health problems than the general population (van Shrojenstein Lantman-de Valk et al., 2000). Our previous studies revealed that individuals with ID had a higher risk of ill health, poorer health status, and a greater prevalence of multiple physical diseases than the general population of Taiwan (Lin, Yen, Li, & Wu, 2005; Lin et al., 2007; Lin et al., 2009; Yen, Lin, Loh, Shi, & Hsu, 2009; Lin, Lin, & Lin, 2010; Lin, Lin, Lin, Chang, et al., 2010; Yen & Lin, 2010; Lin & Lin, 2011; Lin, Wu, Lin, Lin, & Chu, 2011; Yen et al., 2012). The results of the POMONA study confirm that there are disparities in health between people with ID and the general population (Pomona, 2008).

With improvements in medical care and prolongations of life expectancy, the population with ID is growing (Chen, Chou, Lin, Wu, & Lin, 2012; Janicki, Dalton, Henderson, & Davidson, 1999; Patja, Iivanainen, Vesala, Oksanen, & Ruoppila, 2000), and increased use of medical services is inevitable. Data from the US Census Bureau showed that the older population usually accounts for a larger proportion of a country's health care costs as compared with younger age groups (US Census Bureau, 2012). According to BNHI Taiwan, the elderly population accounted for 10.4% of total NHI beneficiaries, but 21% of outpatient visits and 39.3% of total medical expenditures, with 65.7% of them under ambulatory care service (BNHI, 2011).

People with developmental disabilities carry a greater burden of diseases and disorders, require more healthcare attention than the general populations and, thus, have

a significant economic impact on society and family (Lin et al., 2009; Lin, Lin, Yen, Loh, & Chwo, 2009; Hsu et al., 2009; Yen, Lin, Loh, Shi, & Hsu, 2009; Lin, Lin, Hsieh, & Lin, 2010; Lin, Lin, & Lin, 2010; Lin, Lin, Lin, & Hsu, 2010; Lin, Lin, Lin, & Lai, 2010; DeRigne, 2011; Lai, Hung, Lin, Chien, & Lin, 2011; Lin, Lee, Lin, Lin, et al., 2011; Hsu, Yen, Hung, Lin, et al., 2012). The National Health Insurance program (NHI) was implemented in Taiwan in 1995. It is a compulsory social insurance program and covered 99.48% of the population in Taiwan at the end of 2008, and ninety-two percent of the medical institutions in Taiwan were affiliated with the NHI in 2010 (BNHI, 2011). The purpose of our study was to compare and analyze the patterns of ambulatory care visits of elderly people and the elderly with ID in Taiwan in 2007. We hope the findings may provide evidence for health policymaking, especially for the elderly with ID.

2. Methods

The present study compared ambulatory utilization by the elderly between the general population and those with ID in Taiwan by means of a cross-sectional analysis of a national health insurance dataset, provided by the National Health Research Institute. The detailed structure of the claims data sets is described on the NHIRD web site. A two-step cryptographic scrambling technique was applied to protect individual identities before being released to researchers. Theoretically, it is impossible to query the data alone to identify individuals at any level using this database (NHRI, 2010). These data sets contained the ambulatory care clinic and emergency department visit files, including dates of visits, medical care facilities, patients' gender, dates of birth, the three major diagnoses (as coded in the International Classification of Disease, Ninth Revision, Clinical Modification [ICD-9-CM] format) and the medical expenses for each visit from all medical care institutions under contract with the BHNI of Taiwan. The dataset included 103,183 random national health insurance beneficiaries, aged 65 years who claimed outpatient services in the year 2007. All study subjects were divided into three age groups: the young-elderly (65-74 years old), middle-elderly (75-84 years old) and old-elderly (85 years old and older). Among the claimants, 1,469 had a principal diagnosis of intellectual disability (ICD-9-CM Diagnosis Code 317-318). Urbanization of

the residential area was stratified into seven levels based on the method developed by the National Health Research Institute, Taiwan. This method has been adopted as the sampling design reference of the 2005 National Health Interview Survey (NHIS) in Taiwan (Liu et al., 2006) and other studies (Chung, Lee, Kao, & Lin, 2008). We also calculated the frequency distribution of principal diagnoses at all visits by ICD-9-CM chapter.

Statistical analysis was performed with SAS 9.2 for Windows (SAS Institute Inc., Cary, NC, USA). The following variables were included in the analysis to identify demographic characteristics and to compare ambulatory utilization: age group, gender, urbanization and copayment status. Statistical methods included frequencies, percentages, *t*-tests, ANOVA, and logistic regression.

3. Results

The demographic characteristics of the two elderly groups are presented in Table 1. With regards to the age distribution, we found the intellectual disability group (mean age = 72.6 ± 6.6 years) was significantly younger than the general population (mean age = 74.2 ± 6.8 years). The more populous metropolitan areas had a higher population distribution of individuals with ID than the rural areas in Taiwan. The ID group had a higher proportion of social welfare recipients than the general population.

Through stepwise logistic regression analysis, we found that age group, gender, residence urbanization level and copayment status were all factors that affected the population distribution of elderly people with intellectual disabilities (Table 2). Compared with the general population, the ratio of young-elderly with ID was higher than that of the middle-elderly and old-elderly (OR = 0.662, 95% CI = 0.588 - 0.744, OR = 0.599, 95% CI = 0.482 - 0.744, respectively). Females had a higher prevalence of ID than males (OR = 1.113, 95% CI = 1.003-1.235), individuals living in level I, II and IV urbanized areas reported a lower prevalence of ID than individuals living in level VII urbanized areas (OR = 0.772, 95% CI = 0.613 - 0.971, OR = 0.758, 95% CI = 0.601 - 0.956, OR = 0.720, 95% CI = 0.596 - 0.911, respectively), and the proportion of social welfare recipients in the intellectual disability group was much higher than in the general

population (OR = 5.353, 95% CI = 4.091 - 7.005).

Table 3 provides the average annual number of ambulatory visits and the relationship between mean visit frequencies and variables. The average number of ambulatory visits was 30.1 ± 23.1 , and the mean annual visits of the elderly with intellectual disabilities were significantly higher than in the general population (35.2 ± 28.7 vs. 30.0 ± 23.1). Results of factorial ANOVA show that age group and copayment status affected annual outpatient visits. The middle-elderly population had the highest mean frequency of ambulatory visits in both groups, and social welfare recipients.

The mean medical expenditure per visit of the study population was 1146.5 ± 4497.7 NT\$ (1 US\$ = 30 NT\$), and the cumulative annual cost was 34533.7 ± 115891.7 NT\$. The differences and influential factors on mean medical expenses per ambulatory visit between groups are displayed in Table 4. The average medical expense per outpatient service of the general population was 1146 NT\$, and for their counterparts, it was 1164 NT\$. Outcomes of factorial ANOVA show that age group, gender, urbanization and copayment status affected mean medical expenses per ambulatory visit. Table 5 shows the mean annual ambulatory medical expense per person between groups. The elderly with ID spent more annually on outpatient expenses than the general elderly population (41,075 vs. 34,439); only copayment status contributed to this difference after factorial ANOVA analysis.

Circulatory system diseases, musculoskeletal system and connective tissue diseases and digestive system diseases were the top three primary diagnoses of elderly ambulatory visits in both groups (Table 6). However, the three most frequent diagnoses between other pairs of groups were different (Table 7). The three most frequent diagnoses of general young-elderly and middle-elderly were essential hypertension (ICD-9-CM code: 401), diabetes mellitus (ICD-9-CM code: 250) and acute upper airway infection (ICD-9-CM code: 465); for the old-elderly, the diagnoses were essential hypertension, diabetes mellitus and functional digestive disorders not classified elsewhere (ICD-9-CM code: 564). The three most frequent diagnoses of the young-elderly with ID were diabetes mellitus, essential hypertension and acute upper airway infection; for the middle-elderly, the diagnoses were diabetes mellitus, osteoarthritis (ICD-9-CM code: 715) and essential

hypertension; for the old-elderly, they were essential hypertension, osteoarthritis, and dementias (ICD-9-CM code: 290).

4. Discussion

Our study used the NHI claims database to compare ambulatory care utilization by the general elderly population and elderly people with ID in Taiwan. This is the first study using such a comprehensive database to analyze and compare the ambulatory utilization patterns between two elderly groups.

The mean annual outpatient service numbers for Canada, the United States, and the United Kingdom were 10.2, 7.1, and 4.9, respectively (Nie, Wang, Shawn, Moineddin, & Upshur, 2010; National Center for Health Statistics, 2006; Kennerfalk, Ruigómez, Wallander, Wilhelmsen, & Johansson, 2002). Our results showed that both the general population and the elderly with ID in Taiwan had significantly higher average annual outpatient service numbers than previous studies. These findings suggest that the medical services demand for those with ID is higher than that of the general population. Taiwan's NHI provides availability and accessibility of medical care services for the older population, especially for disabled people. Low copayments and a poor referral system may contribute to the high frequency of ambulatory visits (Chen, Chou, & Hwang, 2005).

Owens (2008) found that older women tend to use more health care services and spend more on health care expenditures than men because of the increased incidence of postmenopausal-related disease, such as cerebral vascular disease, breast cancer, and osteoporosis during their longer life span. Turk et al. (2010) found that mean consultation rates with general practitioners for adults with learning disabilities were lower than for the general population; increased age, female gender and having a paid caregiver were associated with greater use of GP services. Results of the current study showed that the general population had a similar trend with previous reports, in that females used outpatient services more frequently than males (Bertakis, Azari, Helms, Callahan, & Robbins, 2000; Lin, Hwang, Chen, Chen, & Hwang, 2011; Sung, Hung, & Chen, 2008). However, for the ID group, males had a higher outpatient visit frequency than females. Further studies are needed to explore gender differences in outpatient utilization among

the elderly with intellectual disabilities.

One population-based study conducted in Ontario, Canada indicated that increasing age is associated with increased utilization of health care services (Nie, Wang, Shawn, Moineddin, & Upshur, 2008). However, our results revealed that the middle-elderly of both groups had the highest number of mean annual ambulatory visits, which is consistent with two previous studies in Taiwan (Lin et al, 2011; Sung et al, 2008). This may be because the middle-elderly have better physical strength than the old-elderly (Lin et al, 2011).

This study found male subjects had higher mean medical expenses per visit than female subjects (1,239.6 NT\$ vs. 1,053.4 NT\$), which is consistent with a previous Taiwanese study (Lin et al, 2011). However, it contradicts the results of a US study (Woolhandler & Himmelstein, 2007). Taiwan's NHI provides comprehensive outpatient medical services, including drugs, consultations, treatments, medical supplies, diagnosis, and dispensing services. As a consequence, medical expenditures vary based on disease, severity of disease and category of contracted medical care institution. Accordingly, the variation in medical expense among each beneficiary is significant, and it is difficult to make comparisons with other insurance systems.

Lin et al. (2011) found that acute upper airway infections were a common complaint of the elderly in outpatient visits. The present study found chronic disease was a common diagnosis at ambulatory visits of the elderly with ID and the general elderly population. Results from the United States (Schappert & Burt, 2006) and Sweden (Jørgensen, Johansson, Kennerfalk, Wallander, & Svärdsudd, 2001) showed that the three most common diagnoses at ambulatory care visits were chronic diseases. The outbreak of SARS in 2003 may have affected outpatient utilization in 2004. More data are needed to investigate this phenomenon.

The strength of the current study is the use of a nationwide health insurance claim database to access and compare healthcare resource utilization between the general population and those with ID. Previous medical utilization studies in Taiwan were mostly based on sampling the population with interviews or self-reported data, which may have a small sample size and is error-prone. This study did not address patterns of drug

prescription, treatment fees and other fees covered by the NHI in elderly ambulatory care services, to show the relationship between expenditures and the variables discussed.

Further studies are needed to explore these important issues.

In conclusion, the mean frequency of ambulatory visits of older people in Taiwan was high, especially in the middle-elderly group. Health education and preventive services should focus on circulatory, digestive, and musculoskeletal diseases, which accounted for over forty percent of the primary diagnoses of ambulatory visits among the elderly.

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Table 1

Demographic characteristics of those with intellectual disabilities and the general population.

Variables	General population N (%)	Intellectual disability N (%)	χ^2 test
Age group			$p < 0.0001$
1. Young-elderly	57178 (56.21)	976 (66.44)	
2. Middle-elderly	35859 (35.25)	403 (27.43)	
3. Old-elderly	8677 (8.53)	90 (6.13)	
Average age (Mean \pm SD)*	74.2 \pm 6.8	72.6 \pm 6.6	
Gender			
1. Female	52252 (51.37)	790 (53.78)	$p = 0.0669$
2. Male	49462 (48.63)	679 (46.22)	
Urbanization level			$p = 0.0003$
I (highest urbanized)	24722 (24.31)	346 (23.55)	
II	23539 (23.14)	323 (21.99)	
III	15102 (14.85)	217 (14.77)	
IV	22274 (21.90)	290 (19.74)	
V	4037 (3.97)	59 (4.02)	
VI	6859 (6.74)	140 (9.53)	
VII (lowest urbanized)	5181 (5.09)	94 (6.40)	
Copayment			$p < 0.0001$
Catastrophic disease	2651 (2.61)	38 (2.59)	
Social welfare	828 (0.81)	60 (4.08)	
Yes	98235 (96.58)	1371 (93.33)	
Total	101714	1469	

* t -test, $p < .05$.

Table 2

Logistic regression analysis of the population distribution of intellectual disabilities in Taiwan.

Variables	Odds ratio	95% Confidence interval	<i>p</i> value
Age group			
1. Middle-elderly	0.662	0.588 0.744	<.0001
2. Old-elderly	0.599	0.482 0.744	<.0001
3. Young-elderly (ref.)	1		
Gender			
1. Female	1.113	1.003 1.235	0.0430
2. Male (ref.)	1		
Urbanization level			
1. I	0.772	0.613 0.971	0.0273
2. II	0.758	0.601 0.956	0.0195
3. III	0.799	0.626 1.021	0.0724
4. IV	0.720	0.569 0.911	0.0061
5. V	0.807	0.518 1.121	0.2008
6. VI	1.124	0.863 1.464	0.3853
7. VII (ref.)	1		
Copayment			
1. Catastrophic disease	1.040	0.752 1.439	1.439
2. Social welfare	5.353	4.091 7.005	7.005
3. Yes (ref.)	1		

Table 3

Comparison of mean annual visits per person between the general elderly population and those with intellectual disabilities.

Variables	General population ^a	Intellectual disability	Factorial ANOVA
	30.0± 23.1	35.2± 28.7	$p<0.0001^b$
Age group			$p=0.0002$
1. Young-elderly	28.7±22.2	32.9±27.8	
2. Middle-elderly	32.6±24.5	42.2±30.2	
3. Old-elderly	28.2±22.5	29.7±26.7	
Gender			$p=0.0609$
1. Female	30.4±22.4	34.2±26.1	
2. Male	29.7±23.9	36.6±31.4	
Urbanization level			$p=0.1818$
1. I	30.3±23.3	36.3±25.5	
2. II	30.8±23.9	34.1±29.6	
3. III	29.8±22.7	37.6±32.1	
4. IV	29.5±22.6	34.8±31.6	
5. V	28.7±21.7	31.0±23.1	
6. VI	30.0±22.3	33.4±23.6	
7. VII	29.6±22.8	37.2±28.9	
Copayment			$p=0.0141$
1. Catastrophic disease	31.8±23.6	36.0±24.6	
2. Social welfare	37.8±31.1	36.6±32.8	
3. Yes	30.3±23.0	34.9±28.2	

^a Data are expressed as mean±SD.

^b *t*-test.

Table 4

Comparison of mean medical expense per visit between the general elderly population and those with intellectual disabilities.

Variables	General population ^a	Intellectual disability	Factorial ANOVA
	1146±4717.8	1164±3542.4	$p=0.3724^b$
Age group			$p=0.0021$
1. Young-elderly	1139.6±5513.5	1124.4±3364.6	
2. Middle-elderly	1161.7±3675.4	1201.5±3664.0	
3. Old-elderly	1116.0±3085.5	1415.6±4654.9	
Gender			$p=0.0077$
1. Female	1100.2±3758.7	1187.1±3944.3	
2. Male	1195.7±5569.7	1140.4±3046.0	
Urbanization level			$p<0.0001$
1. I	1273.2±6855.7	1227.9±3640.2	
2. II	1188.9±3951.7	1299.7±3808.2	
3. III	1126.2±3840.6	1074.4±2674.4	
4. IV	1088.2±3770.3	1062.5±3019.5	
5. V	937.1±3158.4	1241.3±4378.1	
6. VI	979.9±3415.3	1278.1±5322.0	
7. VII	1011.7±3558.2	829.6±1291.1	
Copayment			$p<0.0001$
1. Catastrophic disease	7782.7±16313.0	5654.6±13540.1	
2. Social welfare	966.6±2283.6	995.4±1281.6	
3. Yes	879.0±3271.1	929.6±1757.6	

^aData were expressed with mean±SD deviation.

^b*t*-test.

Table 5

Comparison of mean annual medical expenses per person between the general elderly population and those with intellectual disabilities.

Variables	General population ^a	Intellectual disability	Factorial ANOVA
	34439.2±118328.3	41075±73135.5	$p=0.0321^b$
Age group			$p=0.4677$
1. Young-elderly	32703.9±146394.6	37018.8±67971.8	
2. Middle-elderly	37924.2±69377.8	50687.4±79846.5	
3. Old-elderly	31471.5±54195.9	42027.0±90632.3	
Gender			$p=0.7352$
1. Female	33392.5±69899.5	40539.4±80961.8	
2. Male	35545.0±153718.4	41699.0±62869.0	
Urbanization level			$p=0.9945$
1. I	38560.2±207999.3	44561.4±78820.4	
2. II	36651.6±71575.7	44266.7±82885.4	
3. III	33567.6±69942.0	40362.2±59454.7	
4. IV	32085.5±66862.0	36871.8±60831.5	
5. V	26899.3±55528.5	38517.0±84578.6	
6. VI	29393.1±60563.0	42652.7±89406.8	
7. VII	29938.2±64891.0	31179.6±35139.0	
Copayment			$p=0.0170$
1. Catastrophic disease	161962.8±230337.2	118866.3±186729.3	
2. Social welfare	38014.1±52915.3	30775.8±86869.5	
3. Yes	30967.7±112212.4	39370.0±65493.0	

^aData are expressed as mean±SD.

^b*t*-test.

Table 6

Comparison of the primary diagnoses of ambulatory care visits between the general elderly population and those with intellectual disabilities.

ICD-9 disease and injury category (ICD code)	General population N (%)	Intellectual disability N (%)
Infectious and parasitic diseases (001-139)	89534 (1.56)	2083 (2.06)
Neoplasms (140-239)	114009 (1.98)	1459 (1.45)
Endocrine, nutritional and metabolic diseases, and immunity disorders (240-279)	524363 (9.12)	6952 (6.89)
Diseases of the blood and blood-forming organs (280-289)	21306 (0.37)	345 (0.34)
Mental disorders (290-319)	185889 (3.23)	8195 (8.12)
Diseases of the nervous system and sense organs (320-389)	572886 (9.96)	9207 (9.12)
Diseases of the circulatory system (390-459)	1037069 (18.03)	15797 (15.65)
Diseases of the respiratory system (460-519)	576221 (10.02)	10545 (10.45)
Diseases of the digestive system (520-579)	628621 (10.93)	11044 (10.94)
Diseases of the genitourinary system (580-629)	266524 (4.63)	4407 (4.37)
Complications of pregnancy, childbirth, and the puerperium (630-679)	343 (0.01)	15 (0.01)
Diseases of the skin and subcutaneous tissue (680-709)	195479 (3.40)	4195 (4.16)
Diseases of the musculoskeletal system and connective tissue (710-739)	713564 (12.41)	12078 (11.97)
Congenital anomalies (740-759)	6483 (0.11)	102 (0.10)
Certain conditions originating in the perinatal period (760-779)	142 (<0.01)	1 (<0.01)
Symptoms, signs, and ill-defined conditions (780-799)	461192 (8.02)	8550 (8.47)
Injury and poisoning (800-999)	197492 (3.43)	3449 (3.42)
Supplementary classification of factors influencing health status and contact with health services (v01-v89)	158245 (2.75)	2505 (2.48)
Total	5750389	100940

Table 7

Comparison of the three most common primary diagnoses by ICD-9-CM code between the general elderly population and those with intellectual disabilities.

Age group	First most common diagnosis	%	Second most common diagnosis	%	Third most common diagnosis	%
General population						
Young-elderly	Essential hypertension	6.40	Diabetes mellitus	5.91	Acute upper airway infection	4.64
Middle-elderly	Essential hypertension	6.53	Diabetes mellitus	5.01	Acute upper airway infection	3.64
Old-elderly	Essential hypertension	6.51	Diabetes mellitus	3.50	Functional digestive disorders	3.31
Intellectual disability						
Young-elderly	Diabetes mellitus	4.75	Essential hypertension	4.64	Acute upper airway infection	3.92
Middle-elderly	Diabetes mellitus	4.37	Osteoarthritis	4.31	Essential hypertension	3.74
Old-elderly	Essential hypertension	7.35	Osteoarthritis	5.10	Dementias	3.11