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new cases diagnosed per month, and the percentage of patients with different mild, moderate, and severe AD were expressed as the mean ± the standard deviation, and analyzed by one-way analysis of variance. Categorical data were expressed as percentages, including gender, the proportion of prescriptions for ChEIs, Donepezil, Rivastigmine, Galanthamine, Huperzine A, and Memantine, the reasons for choosing ChEIs and Memantine, and the prescription rates of other drugs. The comparison of the proportion of prescriptions of ChEIs was analyzed by Fisher's exact test and other comparisons of proportions were analyzed by the chi-square test. The proportion of prescriptions of antipsychotics, antidepressants, and anxiolytics among the three groups of clinicians were expressed as the median (interquartile range); their distributions were assessed for normality by the Shapiro-Wilk test and their homogeneity of variance was assessed by Levene's test. If the data were not normally distributed, the non-parametric Kruskal-Wallis test for comparing medians was used, and the Mann–Whitney U-test was used for multiple comparisons among the different groups. The significant level was set at $\alpha = 0.05$, using two-tailed tests. Results that showed $P < 0.05$ were considered to be statistically significant.

Results

Characteristics of study participants

The characteristics of the clinicians who completed the survey are shown in Table 1. There was no statistical difference among the psychiatrists, neurologists, and GPs with respect to age, gender, the numbers of new cases diagnosed per month, or the proportion of cases with different levels of AD severity (the percentage of patients with mild, moderate, and severe AD) ($P > 0.05$).

Rates of prescribing ChEIs and Memantine

Most psychiatrists, neurologists, and GPs prescribed ChEIs to treat patients with AD (see Table 2). The three most commonly used ChEIs were, respectively:

Donepezil (90.9 %), Huperzine A (68.2 %), and Rivastigmine (27.3 %) by neurologists; Huperzine A (87.2 %), Donepezil (51.3 %), and Galantamine (17.9 %) by psychiatrists; and Huperzine A (65.1 %), Donepezil (48.8 %), Rivastigmine (9.3 %) by GPs. There were significant differences in the percentages of psychiatrists, neurologists, and GPs choosing ChEIs agents ($P < 0.05$, see Table 2).

Memantine was used by 20.5 % of psychiatrists, 59.1 % of neurologists, and 20.9 % of GPs for treating AD. The rate of neurologists who prescribed Memantine was higher than the rate among psychiatrists and GPs ($P < 0.01$, see Table 2). There was no statistically significant difference among psychiatrists, neurologists, and GPs in their daily prescribed dosages of ChEIs and Memantine ($P > 0.05$, see Table 2).

Reasons for choosing ChEIs and Memantine

Regarding the reasons why clinicians prescribed ChEIs: 71.9 % of physicians agreed that ChEIs were effective, 35.9 % considered them safe, 10.9 % thought they were familiar with ChEIs, and 9.4 % of them used ChEIs based on support for ChEIs from evidence-based research. Other reasons for choosing ChEIs included convenience for patients to take them orally (once per day), the guidelines' recommendations, ChEIs being the only available AD medication in the hospital, and their ability to control behavioral and psychological symptoms of dementia (BPSD). In all, 37.8 % of physicians prescribed Memantine for treating patients with AD; 47.8 % prescribed Memantine for patients with moderate or severe AD; 19.6 % chose Memantine to control BPSD, and 13.0 % used Memantine when ChEIs had an inadequate effect on patients. Other reasons why physicians prescribed Memantine included fewer side-effects, patients having contraindications to ChEIs, combined use with ChEIs, and support from evidence-based research (see Table 3).

Table 1 Characteristics of the Study Participants

Characteristic	Psychiatrists (*n* = 39)	Neurologists (*n* = 66)	General Physicians (*n* = 43)	F/X^2	*P* value
Age,mean(SD)	41.87(8.36)	41.17 (7.38)	43.44 (8.34)	1.080	0.342
Gender,n (%)					
Male	22 (56.40)	32 (48.50)	20 (46.50)	0.911	0.634
Female	17 (43.60)	34 (51.50)	23 (53.50)		
Numbers of new cases which are diagnosed per month, mean(SD)	14.74(14.90)	13.26(16.04)	13.67(17.20)	0.105	0.900
Severity of AD (%)					
Mild, mean(SD)	31.95(20.60)	34.60(22.64)	37.09(23.48)	0.541	0.584
Moderate, mean(SD)	39.62(16.50)	40.17(20.46)	36.05(13.95)	0.753	0.473
Severe, mean(SD)	28.44(18.35)	25.24(18.09)	26.63(17.24)	0.391	0.677