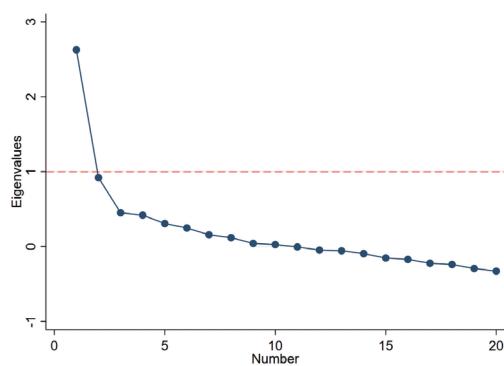
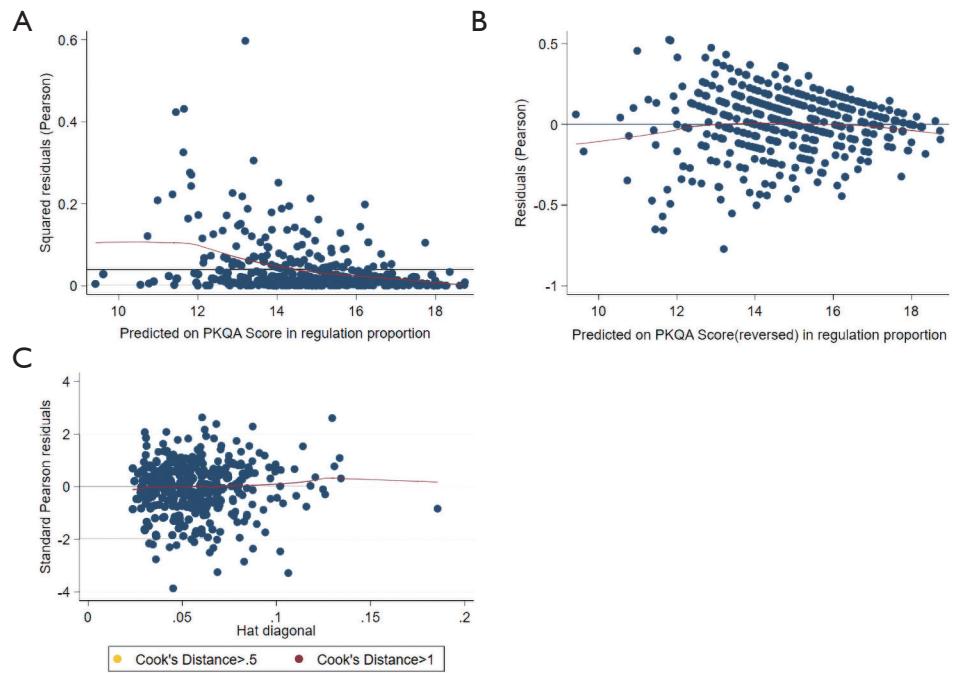


**Figure S1** Cramer's V correlation heatmap of PKAQ. K, items of knowledge questionnaire; PKAQ, parental knowledge questionnaire of autism.



**Figure S2** Scree plot of eigenvalues after factor analysis.



**Figure S3** Generalized linear model diagnostics plots. PKAQ, parental knowledge questionnaire of autism.

**Table S1** Characteristics of knowledge toward ASD and Sociodemographics of the respondents

Variables	Group	N (%)	Total score of K <sup>a</sup>	Z-score/ $\chi^2$	P value	Post-hoc Dunn's test
Total		394	15 [13–17]	–	–	–
Gender						
	Male	326 (82.74)	15 [13–17]	-0.324	0.7462 <sup>c</sup>	–
	Female	68 (17.26)	15 [13–17]			
Currently under intervention						
	Yes	334 (84.77)	16 [13–17]	2.984	0.0028 <sup>b,c</sup>	–
	No	60 (15.23)	14 [11.5–16]			
Major caregiver						
	Mother	314 (79.70)	15 [13–17]	2.591	0.2738 <sup>d</sup>	–
	Father	14 (3.55)	13 [12–16]			
	Others	66 (16.75)	15 [13–17]			
Maternal education						
	Below high school [1]	147 (37.31)	14 [12–16]	50.301	0.0001 <sup>b,d</sup>	[4] > [2]; [4] > [1]; [3] > [1]; [2] > [1]
	College [2]	79 (20.05)	15 [13–18]			
	Bachelor [3]	137 (34.77)	16 [14–18]			
	Master or above [4]	31 (7.87)	17 [15–18]			
Paternal education						
	Below high school [1]	133 (33.76)	14 [12–16]	33.175	0.0001 <sup>b,d</sup>	[4] > [1]; [3] > [1]; [2] > [1]
	College [2]	75 (19.04)	15 [13–17]			
	Bachelor [3]	157 (39.85)	16 [14–18]			
	Master or above [4]	29 (7.36)	16 [15–18]			
Home location						
	Guangzhou [1]	155 (39.34)	16 [14–18]	16.927	0.0002 <sup>b,d</sup>	[3] > [2]; [3] > [1]
	Guangdong province [2]	154 (39.09)	15 [12–17]			
	Outside Guangdong [3]	85 (21.57)	15 [12–17]			
Financial status						
	Bad [1]	32 (8.12)	14 [11–15.5]	20.566	0.0001 <sup>b,d</sup>	[3] > [1]; [3] > [2]; [2] > [1]
	General [2]	278 (70.56)	15 [13–17]			
	Fair/good [3]	84 (21.32)	16 [15–18]			
Parental relationship status						
	Bad	22 (5.58)	14.5 [12–17]	3.175	0.3654 <sup>d</sup>	–
	General	91 (23.10)	15 [13–17]			
	Fair	176 (44.67)	15 [13–17]			
	Good	105 (26.65)	16 [13–17]			
Family members' attitude towards diagnosis						
	Consistent	309 (78.43)	16 [13–17]	2.771	0.0056 <sup>b,c</sup>	–
	Inconsistent	85 (21.57)	15 [12–16]			

**Table S1** (*continued*)

**Table S1** (continued)

Variables	Group	N (%)	Total score of K <sup>a</sup>	Z-score/ $\chi^2$	P value	Post-hoc Dunn's test
Attitude towards prognosis						
	Optimistic	274 (69.54)	15 [13–17]	4.778	0.0917 <sup>d</sup>	–
	Uncertain	97 (24.62)	15 [13–17]			
	Pessimistic	23 (5.84)	14 [10–16]			
Willing to do family-based intervention						
	Willing and possible	320 (81.22)	15 [13–17]	0.625	0.5319 <sup>c</sup>	–
	Willing but cannot/not willing	74 (18.78)	15 [13–17]			
Barriers of family intervention						
Insufficient ASD knowledge	Yes	243 (61.68)	15 [13–17]	0.411	0.6809 <sup>c</sup>	–
	No	151 (38.32)	15 [12–17]			
Economic burden	Yes	78 (19.80)	15 [12–17]	-1.007	0.3138 <sup>c</sup>	–
	No	316 (80.20)	15 [13–17]			
Insufficient time	Yes	109 (27.66)	16 [14–18]	2.137	0.0326 <sup>b,c</sup>	–
	No	285 (72.34)	15 [13–17]			
Access to ASD knowledge						
Internet	Yes	310 (78.68)	15 [13–17]	2.225	0.0261 <sup>b,c</sup>	–
	No	84 (21.32)	14 [12–17]			
Book	Yes	267 (67.77)	16 [14–18]	4.577	<0.0001 <sup>b,c</sup>	–
	No	127 (32.23)	14 [11–16]			
Word of mouth	Yes	61 (15.48)	15 [14–17]	1.051	0.2932 <sup>c</sup>	–
	No	333 (84.52)	15 [13–17]			
Professional lecture	Yes	208 (52.79)	16 [14–18]	3.858	0.0001 <sup>b,c</sup>	–
	No	186 (47.21)	15 [12–17]			
None	Yes	2 (0.51)	–	–	–	–
	No	392 (99.49)	–	–	–	–
Direction for ASD intervention						
	Yes	184 (46.70)	16 [14–18]	3.405	0.0007 <sup>b,c</sup>	–
	No	210 (53.30)	15 [12–17]			
Ways to deal with children's challenging behaviors						
	Yes	117 (29.70)	16 [13–18]	1.981	0.0476 <sup>b,c</sup>	–
	No	277 (70.30)	15 [13–17]			

<sup>a</sup>, data were presented as median values; values in parentheses are low (25th) to high quantiles (75th); <sup>b</sup>, P<0.05; <sup>c</sup>, the data were compared using a Wilcoxon rank-sum test; <sup>d</sup>, the data were compared using a Kruskal-Wallis H test. ASD, autism spectrum disorder; K, items of knowledge questionnaire.

**Table S2** The answers from participants of the PKQA

Questions	Correct (%)	Wrong (%)
1. More than half of autism does not speak for a lifetime	236 (59.9)	158 (40.1)
2. Autism cannot be cured, once diagnosed will be permanently disabled	273 (69.3)	121 (30.7)
3. All autistic children are low IQ	361 (91.6)	33 (8.4)
4. The prevalence of autism is close to 1%	140 (35.5)	254 (64.5)
5. Vaccination can lead to autism	262 (66.5)	132 (33.5)
6. Autism can be diagnosed by neuroimaging	250 (63.5)	144 (36.5)
7. Autism can be cured by drugs	344 (87.3)	50 (12.7)
8. Autism can only be diagnosed after a child enters kindergarten	375 (95.2)	19 (4.8)
9. The incidence of boys is nearly five times that of girls	301 (76.4)	93 (23.6)
10. Sensory integration is the main treatment of autism	208 (52.8)	186 (47.2)
11. Autism is caused by a lack of parental love	342 (86.8)	52 (13.2)
12. Autism is often accompanied by tantrums, beatings, picky eaters, etc.	323 (82.0)	71 (18.0)
13. Children with autism play games in a similar way as children of the same age	310 (78.7)	84 (21.3)
14. Siblings of autistic children have a higher risk of autism	274 (69.5)	120 (30.5)
15. Eating a high-protein diet can lead to autism	303 (76.9)	91 (23.1)
16. The diagnosis of autism relies mainly on the behavioral observations of doctors and interviews with parents	320 (81.2)	74 (18.8)
17. The main goal of autism intervention is improving social communication	307 (77.9)	87 (22.1)
18. During the treatment, once children are crying, we should stop treatments immediately	236 (59.9)	158 (40.1)
19. The current training is focused on interpersonal relationship intervention, structuring, ABA and floor time	339 (86.0)	55 (14.0)
20. The main goal of autism intervention is to let the child talk	327 (83.0)	67 (17.0)

PKQA, parental knowledge questionnaire of autism; IQ, intelligence quotient; ABA, applied behavior analysis.

**Table S3** Cramer's V correlation matrix of the PKQA (N=394)

	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12	K13	K14	K15	K16	K17	K18	K19	K20	
K1	0.2074	0.1639	0.034	0.0775	0.1855	0.0614	0.0334	0.0208	0.2014	0.0635	-0.0198	0.0293	0.1112	0.1168	-0.0222	0.0264	0.0702	-0.0307	0.1121	
K2		0.2357	0.1149	0.0986	0.0431	0.0431	0.0299	-0.0332	0.0317	0.0818	-0.0545	0.0162	0.0496	0.0921	0.032	0.0303	-0.0059	-0.0459	0.0501	
K3			0.033	0.1154	0.113	0.1875	0.103	0.1124	0.1546	0.1799	0.1681	0.0439	0.0786	0.1604	0.0423	0.0378	0.1078	0.1426	0.1802	
K4				0.0663	0.0569	0.1078	0.0433	0.088	0.1284	0.0545	0.1411	0.0887	0.1687	0.0671	0.1262	0.1012	0.0015	0.146	0.0961	
K5					0.2429	0.2302	0.0912	0.0107	0.212	0.1363	0.0589	0.1294	0.0677	0.3766	0.0579	0.024	0.0446	0.0554	0.0652	
K6						0.344	0.1244	0.0746	0.3592	0.2335	0.0693	0.1583	0.1161	0.3219	0.1073	0.0407	0.1103	0.1505	0.2176	
K7							0.2701	0.0754	0.2504	0.2343	0.0792	0.118	0.0956	0.3338	0.0119	0.0176	0.1081	0.1325	0.2131	
K8								0.1818	0.1668	0.2972	0.1102	0.0564	0.1342	0.1015	0.1648	0.0801	0.0092	0.2512	0.2135	
K9									0.073	0.1364	0.1437	0.0463	0.1646	-0.0068	0.1153	0.0643	0.0574	0.2418	0.1143	
K10										0.2021	0.0857	0.1284	0.1917	0.2176	0.0399	0.0359	0.1184	0.1326	0.2892	
K11											0.1098	0.035	0.1819	0.2489	0.0237	0.0094	0.0482	0.2108	0.3425	
K12												0.1751	0.1776	0.0564	0.1634	0.2121	0.0206	0.2875	0.2624	
K13													0.1268	0.0088	-0.0123	0.0665	0.004	0.1122	0.0778	
K14														0.2131	0.0206	0.1662	-0.0014	0.179	0.2583	
K15															0.1219	0.0422	-0.0306	0.1268	0.2168	
K16																0.261	0.0176	0.1813	0.0418	
K17																	0.0388	0.2799	-0.0129	
K18																	0.0739	0.0983		
K19																		0.1881		

Absolute values of Cramer's V lesser than 0.1 were non-significant ( $P>0.05$ ). PKQA, parental knowledge questionnaire of autism; K, items of knowledge questionnaire.

**Table S4** Summary of item factor analysis with the PKQA (N=394)

Items	Factor loadings	Item discrimination	Item difficulty
Item 1	0.2171	0.518	-0.8229
Item 2	0.1393	0.29 (lowest)	-2.8605
Item 3	0.3464 <sup>a</sup>	1.2	-2.442
Item 4	0.2323	0.5234	1.2096 (hardest)
Item 5	0.3558 <sup>a</sup>	0.8604	-0.9215
Item 6	0.5045 <sup>a</sup>	1.5354	-0.512
Item 7	0.4903 <sup>a</sup>	1.8483 (second highest)	-1.5686
Item 8	0.3998 <sup>a</sup>	1.9041 (highest)	-2.2867
Item 9	0.252	0.5025	-2.4645
Item 10	0.4859 <sup>a</sup>	1.5688	-0.1039 (second hardest)
Item 11	0.4771 <sup>a</sup>	1.6434	-1.6248
Item 12	0.3366 <sup>a</sup>	0.8329	-2.062
Item 13	0.2172	0.5278	-2.6189
Item 14	0.3826 <sup>a</sup>	0.9348	-1.0417
Item 15	0.4871 <sup>a</sup>	1.4295	-1.1433
Item 16	0.2106	0.5055	-3.0488 (lowest)
Item 17	0.2022	0.4362	-3.0085 (second lowest)
Item 18	0.1398	0.3054 (second lowest)	-1.3436
Item 19	0.4233 <sup>a</sup>	1.2257	-1.8632
Item 20	0.5003 <sup>a</sup>	1.6385	-1.3843
Eigenvalue	2.6273	-	-
% total variance explained	70.90	-	-
Cronbach's $\alpha$	0.7034	-	-

<sup>a</sup>, loadings larger than 0.3. PKQA, parental knowledge questionnaire of autism.

**Table S5** Generalized linear model for the binomial family (logit link) with the PKQA score as the dependent variable (N=394)

Independent predictor variables	Control variables	Family demographics	Service availability	Participants' attitudes	Participants' behaviors	Service availability, participants' attitudes and behaviors	Full model	Refined full model
	M1	M2	M3	M4	M5	M6	M7	M8
	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)	β (SE)
<b>Layer 1: children characteristics</b>								
Major caregiver = father/others	-0.0319 (0.0634)	-0.0074 (0.0654)	-0.0089 (0.0642)	-0.0287 (0.0641)	-0.0404 (0.0638)	-0.0058 (0.0651)	-0.0014 (0.0664)	0.0164 (0.0654)
Gender = female	0.0742 (0.0686)	0.0066 (0.0706)	0.0527 (0.0690)	0.0855 (0.0693)	0.0818 (0.0691)	0.0685 (0.0698)	0.0099 (0.0716)	0.0264 (0.0708)
<b>Layer 2: family demographics</b>								
Maternal age	—	-0.0021 (0.0092)	—	—	—	—	0.0032 (0.0095)	—
Paternal age	—	-0.0205 (0.0077)**	—	—	—	—	-0.0241 (0.0078)**	-0.0229 (0.0050)***
<b>Paternal education<sup>a</sup></b>								
Master degree or above	—	0.1598 (0.1529)	—	—	—	—	0.032 (0.1563)	—
Bachelor	—	0.0659 (0.0796)	—	—	—	—	0.0246 (0.0813)	—
College	—	0.1627 (0.0844) <sup>†</sup>	—	—	—	—	0.1468 (0.0858)	—
<b>Maternal education<sup>a</sup></b>								
Master degree or above	—	0.5467 (0.1494)***	—	—	—	—	0.4914 (0.1535)**	0.5219 (0.1195)***
Bachelor	—	0.4124 (0.0798)***	—	—	—	—	0.3115 (0.0824)***	0.3403 (0.067)***
College	—	0.2456 (0.0809)**	—	—	—	—	0.1835 (0.0824)*	0.2303 (0.0725)**
<b>Home location<sup>b</sup></b>								
Guangdong province	—	-0.2273 (0.0627)***	—	—	—	—	-0.1337 (0.0657)*	-0.1136 (0.0638) <sup>†</sup>
Outside Guangdong province	—	-0.1773 (0.0732)*	—	—	—	—	-0.1273 (0.0749) <sup>†</sup>	-0.1318 (0.0733) <sup>†</sup>
Financial status = fair/good <sup>c</sup>	—	0.2962 (0.0718)***	—	—	—	—	0.2706 (0.0727)***	0.2564 (0.0713)***
<b>Layer 3: service availability</b>								
Time interval from diagnosis to parent training program	—	—	-0.0262 (0.0039)***	—	—	-0.0265 (0.0040)***	-0.0242 (0.0042)***	-0.0241 (0.0041)***
Currently under intervention = yes	—	—	0.4091 (0.0688)***	—	—	0.2615 (0.0715)***	0.2772 (0.0726)***	0.2749 (0.0721)***
<b>Layer 4: participants' attitudes</b>								
Barriers of family-based intervention: insufficient time = yes	—	—	—	0.1998 (0.0592)**	—	0.151 (0.0599)*	0.0575 (0.0625)	—
Attitude towards diagnosis = consistent	—	—	—	0.2134 (0.0616)**	—	0.2075 (0.0633)**	0.1697 (0.0657)*	0.1691 (0.0648)**
Attitude towards prognosis = optimistic <sup>d</sup>	—	—	—	0.046 (0.0569)	—	0.0153 (0.0585)	-0.0073 (0.0597)	—
Direction for ASD intervention = yes	—	—	—	0.2956 (0.0598)***	—	0.2106 (0.0621)**	0.1744 (0.0630)**	0.1725 (0.0553)**
Ways for challenging behaviors = yes	—	—	—	-0.0024 (0.0661)	—	-0.0302 (0.0667)	-0.0013 (0.0685)	—
<b>Layer 5: participants' behaviors</b>								
Access to ASD knowledge = yes								
Internet	—	—	—	—	0.1329 (0.0647)*	0.1222 (0.0659) <sup>†</sup>	-0.0079 (0.0682)	—
Books	—	—	—	—	0.3235 (0.058)***	0.2754 (0.0586)***	0.2093 (0.0602)**	0.2131 (0.0571)***
Professional lecture	—	—	—	—	0.253 (0.0527)***	0.1959 (0.0554)***	0.1305 (0.0571)*	0.1308 (0.0559)*
Constant	1.0305 (0.310)***	1.6146 (0.2099)***	0.8448 (0.0655)***	0.646 (0.0683)***	0.5868 (0.0621)***	0.2944 (0.0985)***	1.097 (0.2323)***	1.1678 (0.197)***
df	3	14	5	8	6	13	24	16
Log likelihood	-1,129.74	-1041.191	-1,095.036	-1,097.847	-1,086.122	-1,040.575	-991.731	-993.848
Deviance	1,085.729	908.632	1,016.321	1,021.943	998.493	907.401	809.711	813.946
Pearson	1,057.274	894.486	990.004	990.736	964.201	869.582	780.167	786.679
AIC	2,265.48	2,110.383	2,200.072	2,211.693	2,184.243	2,107.151	2,031.462	2,019.696
BIC	2,277.409	2,166.052	2,200.072	2,243.504	2,208.101	2,158.843	2,126.894	2,083.318

Optimization method: maximum likelihood. <sup>†</sup>, P<0.1; \*, P<0.05; \*\*, P<0.01; \*\*\*, P<0.001. <sup>a</sup>, high school or below was defined as the reference group; <sup>b</sup>, Guangzhou was defined as the reference group; <sup>c</sup>, bad/general was defined as the reference group; <sup>d</sup>, unknown/pessimistic was defined as the reference group. AIC, Akaike information criterion; ASD, Autism spectrum disorder; BIC, Bayesian information criterion; PKQA, parental knowledge questionnaire of autism; SE, standard error.