

Factors Associated with the Adult Children's Willingness to Utilize Elderly Medical Escort Service for Outpatient Visit in China: A Mixed-Methods Research

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ABSTRACT

China is facing big pressure due to its high aging rate. Compared to other age groups, the elderly are characterized by a high number of multiple chronic diseases and need to frequently visit hospitals. However, most seniors are unable to independently complete medical treatments in smart hospitals with complex self-help integrated machines, scattered departments, popular appointment registration, and convenient mobile payment, and need to be accompanied by their adult children. Medical escorts might replace the offspring's role, but their willingness to utilize Elderly Medical Escort Service (EMES) is associated with different factors. Among 1936 individuals that responded to the questionnaire, 68.2% were willing to use the EMES. The willingness to utilize EMES was associated with long-distance separation from seniors (OR=0.79, 95% CI: 0.63-0.98), difficulties in taking leaves to accompany the elderly to medical appointments (OR=1.39, 95% CI: 1.11-1.73), outpatient satisfaction (OR=1.24, 95% CI: 1.13-1.36), payment for EMES (OR=2.56, 95% CI: 2.07-3.18), escorts being trained (OR=2.35, 95% CI: 1.80-3.07) and licensed (OR=1.31, 95% CI: 1.01-1.72), and EMES being graded (OR=1.93, 95% CI: 1.48-2.51). Both data suggested that regarding training, participants paid more attention to professional ethics. Additionally, the traditional Chinese culture of filial piety cannot be ignored while using EMES. This survey indicated that the demands of the children's willingness to utilize EMES are high and urgent. The results might guide EMES providers to improve their professional skills especially ethics and combine the need for children to do their filial duty that would be welcomed by users.

Keywords: Medical escort; Outpatient visiting; Elderly; Adult children

INTRODUCTION

The global trend of increasing aging is a major public health challenge [1]. For example, the data from the National Bureau of Statistics of China showed that the elderly population above 60 years was 264 million (18.7%) by the end of 2020, making China the only country in the world with an elderly population of more than 200 million [2,3]. According to the report released by the China Research Center on Aging in 2018, only one-third of the older population reported their health as "good" and a large percentage of older adults suffer from one or more chronic diseases, thereby requiring regular follow-up visits to the hospital. Frequently, they need to wait 2-3 h or even half or a whole day. Additionally, as intelligent devices become more prevalent

in smart hospitals, older adults may not independently complete outpatient visits due to illness and physical frailty [4,5]. These crucial challenges exacerbate the burden on families and public healthcare systems [6]. Therefore, medical escorting has become one of the most pressing needs for the elderly population.

However, influenced by the one-child policy, the coexistence of multiple seniors with senior and junior (four grandparents, two parents, and one child) in Chinese households has become increasingly prominent, which is called the "4-2-1" single-family structure [7]. Furthermore, with the unbalanced development of regional economies and urbanization, a large number of young rural laborers have migrated to developed areas, intensifying the empty nesting [8]. Therefore, it is difficult for seniors to rely on their children to frequently accompany them to

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the hospital. Additionally, Chinese hospitals have a limited number of outpatient caregivers and social volunteers to meet the growing demand for escort services for older adults [9]. Hence, considering the serious shortage of family and social organization escorting capacity, third-party providers need to share some of the aging stress of families. Moreover, medical escorting is an essential part of medical care services in community home-based care and plays an important role in alleviating the difficulties of the elderly to see a doctor [10-12].

Furthermore, previous studies have only analyzed the elderly's willingness to use community home-based care services, and few surveys have shown the obstacles and influencing factors (e.g. physiological and social disadvantages, age, economic level, family support, health status, and other related effects) of seniors in the community-initiated calls for help [13-17]. However, the expectations and acceptability of these services among their adult children remain unknown, as the related factors. Hence, in the present study, we performed mixed-methods research focused on the associated factors and willingness of Chinese adult children to utilize Elderly Medical Escort Service (EMES) for outpatient visits.

MATERIALS AND METHODS

Design and setting

We performed a sequential mixed-method study in China. The study consisted of two different phases: a quantitative survey and a qualitative interview. In the first phase, we conducted a cross-sectional study to collect and analyze data. In the second phase, we designed a qualitative interview based on the results of the cross-sectional study to refine and interpret the statistical results by exploring the experiences and perspectives of the participants. The entire study was approved by the Changzhou No. 2 People's Hospital Ethics Committee (No. [2021] KY318-01).

Participants of the quantitative survey

For the quantitative phase, a cross-sectional study was performed in three cities (Nanjing, Suzhou, and Changzhou) in the Jiangsu Province. A convenience sampling method was used to randomly select 2000 adult children from July to September 2021 to conduct the questionnaire survey. Participants were recruited if they met the inclusion criteria: (1) had an income; (2) had at least one elderly person in the family and had accompanied them to the hospital; (3) have 18-60 years; (4) were conscious, had no communication impairment, and obtained informed consent.

Quantitative data collection

After an extensive literature review, we designed the questionnaire including 34 items, including age, monthly income, gender, education, marital status, whether they live with the elderly, whether they have siblings, and where older people usually go when they are sick and the current situation of children accompanying the elderly to medical appointments, and the demand for EMES. The surveyors consisted of eight third-year nursing students. They were trained using a uniform instructional language. The survey was conducted on the principle of informed consent and voluntary participation. Questionnaires were distributed to the respondents by the surveyors, and relevant precautions were explained, who filled them out on the spot. After the completion of the field, they were checked one by one, errors were promptly corrected, and the recovery was finally unified. A total of 2000 questionnaires were distributed, and 1936 valid questionnaires

were collected (recovery rate of 96.8%).

Quantitative data analysis

Statistical analyses were performed with IBM SPSS 23.0 software. The basic conditions of the survey respondents were described by frequencies and percentages. The χ^2 test was applied for comparisons between two and more groups, and the influencing factors were analyzed by binary logistic regressions. A $P < .05$ was considered statistically significant.

Participants of the qualitative interview

In the second phase, according to the different attitudes regarding the EMES, participants from the 1936 respondents were included. The interview outline consisted of five questions, including the feelings and difficulties of accompanying older adults to medical appointments, reasons for using or not using EMES, reasons for being willing to pay or not paying for EMES, and opinions and suggestions about EMES. The qualitative study was conducted by trained interviewers following a standardized protocol.

Qualitative data collection

Appointments were made in advance with the participants for the time and place of the interview. In the beginning, the researchers explained the purpose, content, and methods of the study, and required the use of audio recording in the process. The participants signed informed consent before the study and could withdraw at any time.

During the study, interviewers were guided by an interview outline, face-to-face in-depth communication was conducted with the interviewees, and the time was controlled at 30-60 minutes. We maintained a neutral attitude and did not evaluate the interviewees' answers, and, when necessary, we followed up on the questionable or valuable parts to ensure the completeness and accuracy of the information. At the same time, the tone of voice, intonation, expressions, and movements of interviewees were carefully recorded.

Qualitative data analysis

Herein, we applied Colaizzi's 7-step phenomenological method to analyze the collected data. The recorded and transcribed data were collected within 24 h after the interviews were completed, and the recordings were imported into Nvivo version 12 (QSR International) for coding and analysis. The investigators combined the interviewees' tone and emotions, and the transcripts were carefully read to extract themes from the interview content. After checking the classification with the group members, the interviewees were asked to verify whether the data matched their expressed wishes to ensure that the data were true and accurate.

Integration of quantitative and qualitative results

Common themes of the qualitative studies were compared with the quantitative survey data. Results comprehended the matching between survey items and interview themes to allow comparisons and meta-inferences [18]. Findings were divided into three types: accordance-the results of the two studies was identical and reinforced each other; expansion-there is disagreement to address different aspects of the phenomenon; and discordance-the results from the quantitative and qualitative studies contradicted each other [18].

RESULTS

Quantitative results

General characteristics of adult children's willingness to use EMES: A total of 1936 participants finished the questionnaire. There were 955 (49.3%) males and 981 (50.7%) females, and the average age was 37.4 years old. Additionally, 645 participants were from Nanjing, 611 from Suzhou, and 680 from Changzhou. Then, participants were divided into two groups based on their willingness to use EMES: the willingness group (n=1321) and the unwillingness group (n=615). Table 1 shows that among all participants, 68.5% did not live with the elderly and 73.1% had one or more siblings. When older people were sick, 38.6% went to tertiary hospitals and 39.8% adult children accompanied them to medical appointments. A total of 61.3% children were too busy to accompany the elderly to doctor's appointments, 72.2% had to take time off work, and 39.9% had difficulties asking for a leave. When they went to the hospital, 75.1% children believed that hospital guides and volunteers could help, and 63.3% were satisfied with the medical experience. Moreover, 54.1% children accepted to pay for EMES, and 1060 of 1321 (80.2%) accepted to be charged no more than 300 RMB for a half-day. Additionally, participants considered that the medical escorts should be trained (79.7%) and licensed (77.5%). Besides, 79.5% participants perceived that the EMES should be graded according to the severity of the seniors' conditions. If the escort profession were to emerge, 76.2% participants would recommend it to their friends or colleagues. The above results presented significant differences between the two groups ($P<.05$) (Table 1).

Factors associated with the children's willingness to use EMES among all participants

Among all participants, the children's willingness to use EMES was considered a dependent variable (0=no, 1=yes). The dummy variables were assigned to the multi categorical variables in the independent variables: monthly income, whether you have siblings (0=no, 1=yes), do you live with the elderly (0=no, 1=yes), where do older people usually go when they are sick (0=other, 1=tertiary hospital), who accompanies the elderly when they are sick (0=other, 1=children), whether you are too busy to accompany the elderly when they are sick (0=no, 1=yes), do the children have leave of absence to accompany the elderly to see a doctor (0=no, 1=yes), is there any difficulty in taking time off (0=no, 1=yes), can hospital guides and volunteers help you and the elderly (0=no, 1=yes), outpatient satisfaction (0=no, 1=yes), whether the escort is regular trained (0=no, 1=yes), whether the escort is licensed (0=no, 1=yes), whether the EMES is paid for use (0=no, 1=yes), and whether the EMES is graded according to the elderly's conditions (0=no, 1=yes). Confounding factors, such as age and gender, were controlled and binary logistic analyses were performed. Table 2 indicates that long-distance separation from seniors (OR=0.79, 95% CI: 0.63-0.98), difficulties in taking leaves to accompany the elderly to medical appointments (OR=1.39, 95% CI: 1.11-1.73), outpatient satisfaction (OR=1.24, 95% CI: 1.13-1.36), payment for EMES (OR=2.56, 95% CI: 2.07-3.18), escorts being trained (OR=2.35, 95% CI: 1.80-3.07) and licensed (OR=1.31, 95% CI: 1.01-1.72), and EMES being graded (OR=1.93, 95% CI: 1.48-2.51) were independent influential factors for the children's willingness to use EMES (Table 2).

Table 1: General characteristics of adult children's willingness to use EMES (n=1936).

Characteristics	Total (n=1936)	Group		P
		Unwillingness (n=615)	Willingness (n=1321)	
Age, mean (\pm SD)	37.4 (11.2)	37.3 (11.2)	37.5 (11.1)	0.763
Monthly income, mean (\pm SD)	7186.5 (10610.2)	7349.3 (11388.9)	7110.7 (10231.1)	0.145
Gender, n (%)				0.36
Male	955 (49.3)	294 (47.8)	661 (50.0)	
Female	981 (50.7)	321(52.2)	660 (50.0)	
Education, n (%)				0.188
Senior/Polytechnic school or below	1012 (52.3)	308 (50.1)	704 (53.3)	
Bachelor degree or above	924 (47.7)	307 (49.9)	617 (46.7)	
Marital Status, n (%)				0.63
Unmarried, widowed, divorced	569 (29.4)	176 (28.6)	393 (29.8)	
Married	1367 (70.6)	439 (71.4)	928 (70.2)	
Do you live with the elderly? n (%)				0.002
No	1327 (68.5)	391 (63.6)	936 (70.9)	
Yes	609 (31.5)	224 (36.4)	385 (29.1)	
Do you have any siblings? n (%)				0.047
No	521 (26.9)	184 (29.9)	337 (25.5)	
Yes	1415 (73.1)	431 (70.1)	984 (74.5)	
Where do older people usually go when they are sick? n (%)				< .001
Do not go to the doctor	88 (4.5)	44 (7.2)	44 (3.3)	
Pharmacy	289 (14.9)	91 (14.8)	198 (15.0)	
Private clinic	196 (10.1)	78 (12.7)	118 (8.9)	
Community Health Service Center	615 (31.8)	181 (29.4)	434 (32.9)	

Tertiary hospital	748 (38.6)	221 (35.9)	527 (39.9)	
Who accompanies the elderly to their medical appointments when they are sick? n (%)				< .001
Seniors themselves/spouses	301 (15.5)	114 (18.5)	187 (14.2)	
Volunteers, etc.	270 (13.9)	108 (17.6)	162 (12.3)	
Relatives	594 (30.7)	198 (32.2)	396 (30.0)	
Adult children	771 (39.8)	195 (31.7)	576 (43.6)	
Do you have situations where you are too busy to accompany an elderly person to a doctor's appointment when they are sick? n (%)				< .001
No	750 (38.7)	294 (47.8)	456 (34.5)	
Yes	1186 (61.3)	321 (52.2)	865 (65.5)	
Do you have situations where you have to take time off work to accompany them to see a doctor? n (%)				< .001
No	539 (27.8)	223 (36.3)	316 (23.9)	
Yes	1397 (72.2)	392 (63.7)	1005 (76.1)	
Is there any difficulty in taking time off work to take the elderly to see a doctor? n (%)				< .001
No	1164 (60.1)	410 (66.7)	754 (57.1)	
Yes	772 (39.9)	205 (33.3)	567 (42.9)	
Can hospital guides and volunteers help you and the elderly when you go to the hospital? n (%)				< .001
Can not help at all	483 (24.9)	195 (31.7)	288 (21.8)	
Partially helpful	739 (38.2)	215 (35.0)	524 (39.7)	
Totally helpful	714 (36.9)	205 (33.3)	509 (38.5)	
How was your recent experience accompanying an older adult to a doctor's appointment? n (%)				< .001
Very dissatisfied	101 (5.2)	62 (10.1)	39 (3.0)	
Not satisfied	120 (6.2)	82 (38.1)	38 (2.9)	
Average	488 (25.2)	130 (21.1)	358 (27.1)	
Satisfied	619 (32.0)	168 (27.3)	451 (34.1)	
Highly satisfied	608 (31.3)	173 (28.1)	435 (32.9)	
Would you agree paying for the use of EMES? n (%)				< .001
No	889 (45.9)	400 (65.0)	489 (37.0)	
Yes	1047 (54.1)	215 (35.0)	832 (63.0)	
Who do you think is an appropriate medical escort? n (%)				0.003
Those who are familiar with the consultation process	470 (24.3)	142 (23.1)	328 (24.8)	
Volunteers	250 (12.9)	79 (12.8)	171 (12.9)	
Housekeeping staff	126 (6.5)	58 (9.4)	68 (5.1)	
Interns/Nursing students	554 (28.6)	185 (30.1)	369 (27.9)	
Nurse practitioners	536 (27.7)	151 (24.6)	385 (29.1)	
How much should be charged for a half-day EMES? n (%)				< .001
Free	389 (20.1)	128 (20.8)	261 (19.8)	
1 ~ 150 RMB	1116 (57.6)	318 (51.7)	798 (60.4)	
151 ~ 300 RMB	431 (22.3)	169 (27.5)	262 (19.8)	
Do you think medical escorts need regular training and assessment? n (%)				< .001
No	393 (20.3)	220 (35.8)	173 (13.1)	
Yes	1543 (79.7)	395 (64.2)	1148 (86.9)	
Do medical escorts need to be licensed? n (%)				< .001
No	436 (22.5)	209 (34.0)	227 (17.2)	
Yes	1500 (77.5)	406 (66.0)	1094 (82.8)	
Should EMES be graded according to the severity of the elderly's conditions? n (%)				< .001
No	396 (20.5)	213 (34.6)	183 (13.9)	
Yes	1540 (79.5)	402 (65.4)	1138 (86.1)	
If the escort profession were to emerge, would you recommend it to your friends or colleagues? n (%)				< .001
No	460 (23.8)	215 (35.0)	245 (18.5)	
Yes	1476 (76.2)	400 (65.0)	1076 (81.5)	

Table 2: Binary logistic regression analysis of influencing factors associated with the children's willingness to use EMES among all participants (n=1936).

Variables	B	SE	Wald χ^2	OR	95%CI	P	400 (65.0)
Long-distance separation	-0.24	0.11	4.54	0.79	0.63	0.98	0.033
Children accompany seniors to see the doctor by themselves	0.13	0.05	6.75	1.14	1.03	1.26	0.009
The children have a leave of absence	0.29	0.11	6.83	1.34	1.08	1.66	0.009
Difficulty in taking time off work	0.33	0.11	8.56	1.39	1.11	1.73	0.003
Outpatient satisfaction	0.22	0.05	20.53	1.24	1.13	1.36	< .001
Would you agree to pay for EMES?	0.9	0.11	74.4	2.56	2.07	3.18	< .001
Regular training and assessment of escorts	0.85	0.14	38.71	2.35	1.8	3.07	< .001
Escorts need to be licensed	0.27	0.14	4.05	1.31	1.01	1.72	0.044
EMES is graded according to the elderly's conditions	0.66	0.13	24.01	1.93	1.48	2.51	< .001
Constant	-2.48	0.27	85.53	0.08			< .001

Qualitative results

Basic information of the interviewees: 21 individuals participated in the qualitative interviews, including 7 from Nanjing, 7 from Suzhou and 7 from Changzhou. There were 11 men (52.4%); and the average age was 38.9 years old. 10 (47.6%) interviewees had a bachelor's degree or above (Table 3). The demographic characteristics of the participants in the qualitative interviews were similar to those in the quantitative study.

Qualitative findings

Five themes were summarized from the qualitative study: the feelings of children accompanying the elderly to see a doctor, difficulties encountered by children accompanying the elderly to medical appointments, children's willingness to pay for EMES, and children's suggestions on EMES (Table 4).

Combination of quantitative and qualitative findings by associated factors

In the quantitative study, long-distance separation, children accompanying seniors to see a doctor by themselves and having a leave of absence to accompany the elderly to see a doctor, difficulty in taking time off, outpatient satisfaction, payment for EMES, the escort being trained and licensed, EMES being graded according to the elderly's conditions were independent influential factors for children's willingness to use EMES. The results of the interview offered a deeper

understanding of the factors influencing the children's willingness to use EMES. All interviewees accompanied the elderly to see a doctor in the past three months. Most respondents considered that the consultation process was complicated and cumbersome, and smart hospitals were not friendly to the elderly, who had communication barriers with the medical staff. Hence, children were concerned about the elderly going to see a doctor alone and had to take time off to accompany them. However, there were some difficulties in taking time off: "I had to take time off by transferring and had to work overtime to make up the work I should do, otherwise it will affect the progress of the team." "Taking time off would affect attendance and deduct salary, so I accompanied the elderly to his appointments on weekends." Additionally, some children felt physically and mentally exhausted when accompanying older adults to medical appointments: "Yesterday I was at work, today I accompanied my mom to a doctor's appointment. I was not familiar with the consultation process, so I had to keep asking the guide, waiting in line and taking care of the elderly and worrying if she would fall, which was particularly testing." Therefore, most participants were willing to use EMES: "The escorts are more familiar with the hospital and the consultation process than I am, and are more professional and will not register in the wrong department. It is more efficient, the elderly suffer less, and I get a good rest, too. It is a win-win situation for everyone." Moreover, some respondents noted that they were willing to pay for EMES because the escorts got their money's worth for their work, but the price should not be higher than the salary deducted for the leave (Table 5).

Table 3: Basic information of the 21 interviewees.

No	Age (years)	Gender	Education	Accompanying patients	Occupation	Willingness to use EMES
A1	27	Male	Bachelor degree	Grandmother	Engineer	No
A2	30	Male	Bachelor degree	Grandfather	Civil engineer	Yes
A3	43	Male	Junior high school	Mother	Welder	Yes
A4	51	Male	Senior high school	Mother	Cook	No
A5	24	Female	Bachelor degree	Grandfather	Clerk	Yes
A6	48	Female	Junior high school	Father-in-law	Saleswoman	Yes
A7	50	Female	Primary school	Mother	Worker	No
A8	43	Female	Primary school	Father	Construction worker	No
A9	47	Female	Senior high school	Father	Construction worker	Yes
A10	50	Male	Junior high school	Mother	Welder	Yes
A11	42	Male	Senior high school	Parents	Construction worker	No
A12	26	Male	Bachelor degree	Grandmother	Engineer	Yes
A13	42	Female	Bachelor degree	Mother-in-law	Company employee	Yes

A14	49	Male	Master degree	Father	Civil servant	Yes
A15	32	Female	Bachelor degree	Grandfather	Company employee	Yes
A16	45	Male	Bachelor degree	Mother	Company employee	Yes
A17	46	Female	Senior high school	Mother-in-law	Company employee	Yes
A18	35	Female	Bachelor degree	Mother	Civil servant	Yes
A19	40	Male	Senior high school	Father	Driver	Yes
A20	25	Male	Bachelor degree	Grandfather	medical representative	Yes
A21	50	Female	Primary school	Mother-in-law	worker	No

Table 4: Qualitative findings.

Themes	Qualitative findings
	1. Feelings of children accompanying the elderly to see a doctor
a) Satisfaction with medical experience	A1: The hospital provided wheelchairs, and it was convenient to push my grandmother to see the doctor. A2: The hospital self-help machine was equipped with staff to guide how to use it.
b) Dissatisfaction with medical experience	A4: The consultation process was complicated and cumbersome, I was not familiar with the hospital, running back and forth to find the department, the efficiency of seeing a doctor was low, and taking my mom with me made both of us very tired.
	2. Difficulties encountered by children accompanying the elderly to medical appointments
a) Smart hospitals are not friendly to the elderly	A15: Smart hospitals are only friendly to young people, and I am concerned about my grandfather going to see a doctor alone. A5: My grandfather did not know how to use hospital smart terminals and had communication barriers with medical staff, and need us to accompany him to medical appointments
b) Difficulty in taking time off work to accompany seniors to medical appointments	A12: I am a developmental engineer and very busy, so it is very difficult to take time off. If I take time off, the whole project will be affected. A13, A17: I have to take time off by transferring, and I have to work overtime to make up the work I should do, otherwise it will affect the progress of the team. A15, A19: Taking time off will affect attendance and will deduct salary, so I accompany the elderly to his appointments on weekends and feel tired on weekdays because I didn't rest properly on our days off.
c) Hospital guides and volunteers cannot help	A6: Accompanying the elderly, the registration was fast, but the waiting time to see the doctor was long, especially the tests. Some tests could not even be done on the same day, and I only took one day off, so it was a hassle. A5: We made an appointment to register online in advance, but, when we arrived at the hospital, we were told that we had registered for the wrong department and had to wait in line to register again, which made us very annoyed.
	3. Adult children's attitudes toward EMES
a) Willingness to use EMES	A2: I am busy with work and it is difficult to take time off, so I am willing to use EMES. A14: We do not live with the elderly and when they are sick, we can not accompany them to the hospital. We can pay for someone to accompany them to medical appointments. A5, A20: The escorts are more familiar with the hospital and the consultation process than I am, and are more professional and will not register in the wrong department. It is more efficient, the elderly suffer less, and I get a good rest, too. It is a win-win situation for everyone.
b) Unwillingness to use EMES	A1, A8: There have been previous reports of babysitters abusing the elderly. Thus, I am concerned about the character of the escorts, and will not leave the elderly with them alone. A7: If it's free, I'm willing to use.
	4. Children's willingness to pay for EMES
a) Willingness to pay for EMES	A12, A20: Escorts are professionals who are familiar with the consultation process and are highly efficient, so they get their money's worth for their work. A10: The price cannot be higher than the salary deducted for the leave. A18: I am too busy at work to take care of the elderly, so we are willing to pay for a professional to accompany them to the doctor.
b) Unwillingness to pay for EMES	A1: EMES does not meet my requirements, especially the professional ethics, I do not feel comfortable leaving the elderly to them.

A21: EMES is part of the hospital's work and cannot be charged for.	
A7, A11: I cannot afford the high cost of EMES.	
5. Children's suggestions on EMES	
a) The escorts should be trained and licensed	A9, A12: Whoever accompanies an older person to a doctor's appointment must be trained and qualified for the job, especially in professional ethics, to ensure the safety of the elderly.
b) EMES should be graded according to the elderly's conditions	A14: I think there is a necessity for graded companionship based on the condition of the elderly.
A3: The medical escort can accompany the patient in minor cases alone. But my parents should be accompanied by me if they are seriously ill. It is a traditional virtue for my parents to want to be accompanied by their loved ones at medical appointments.	
c) Hospitals strengthen the supervision and training of escorts	A1, A16: The hospital should be responsible for training and supervising the escorts so that we can use EMES with confidence.

Table 5: Combination of quantitative and qualitative findings by associated factors.

Related factors	Quantitative findings, No. (%)	Qualitative findings	Meta-inferences
Long-distance separation	1327 of 1936 (68.5)	Children do not live with the elderly and when they are sick, children cannot accompany them to the hospital, who can pay for someone to accompany seniors to medical appointments.	
Children accompany seniors to see the doctor by themselves	771 of 1936 (39.8)	Smart hospitals are only friendly to young people. The elderly do not know how to use hospitals' smart terminals and have communication barriers with the medical staff. Children are concerned about the elderly going to see a doctor alone and I always take time off to accompany them to medical appointments.	Accordance: the two studies identified that long-distance separation, having a leave of absence to accompany seniors to see a doctor by themselves, and difficulty in taking time off work and are influential factors in children's willingness to use EMES.
The children have a leave of absence	1397 of 1936 (72.2)	Children are busy with work and it is difficult to take time off, so they are willing to use EMES.	
Difficulty in taking time off work	772 of 1936 (39.9)		
Would you agree to pay for EMES?	1047 of 1936 (54.1)	Escorts are professionals who are familiar with the consultation process and are highly efficient, so they get their money's worth for their work. However, the price cannot be higher than the salary deducted for the leave.	Expansion: Both surveys indicated that children were willing to pay for EMES, but charges should be based on the actual situation of the individual.
Outpatient satisfaction	1227 of 1936 (63.3)	Children were not familiar with the consultation process, so they had to keep asking the guide, waiting in line and taking care of the elderly, and worrying if they would fall, which was particularly testing.	Discordance: The rate of dissatisfaction with medical experience in the quantitative survey data was much lower than the qualitative data, showing that terrible medical experience was common.
Regular training and assessment of escorts	1543 of 1936 (79.7)	There have been previous reports of babysitters abusing the elderly. Hence, whoever accompanies an older person to a doctor's appointment must be trained and qualified for the job, especially in professional ethics, to ensure the safety of the elderly.	Expansion: Both surveys demonstrated that escorts should be trained and licensed. However, adult children paid more attention to the ethics of the escorts and their ability to love and care for the elderly.
Escorts need to be licensed	1500 of 1936 (77.5)		
EMES is graded according to the elderly's conditions	1540 of 1936 (79.5)	There is a necessity for graded companionship based on the condition of the elderly, but the elderly still want to have their children with them when they are seriously ill, which is also a traditional Chinese virtue.	Expansion: Both data showed that it is necessary to have level-to-level escorting, but it is also important for family members to accompany the patient, especially if the older person is seriously ill because of the Chinese filial piety culture.

The quantitative survey showed that outpatient satisfaction [1227 of 1936 (63.3%)] was positively associated with the children's willingness to use EMES. However, the findings from the interviews revealed that only 23.8% of the interviewees (5 of 21) were satisfied with the medical experience: "We made an appointment to register online in advance, but, when we arrived at the hospital, we were told that we had registered for the wrong department and had to wait in line to register again, which made us very annoyed."

Both surveys demonstrated that the escorts should be trained and licensed. However, the adult children paid more attention to the professional ethics of the escorts and their ability to love and care for the elderly: "There have been previous reports of babysitters abusing the elderly. Hence, whoever accompanies my parents to a doctor's appointment must be trained and qualified for the job, especially in professional ethics, to ensure the safety of the elderly."

The data from both studies showed that level-to-level escorting is required according to the elderly's condition. However, several interviewees assumed it was also important for family members to accompany the old patient because of Chinese filial piety culture, especially if they were seriously ill: "I think there is a necessity for graded companionship based on the condition of the elderly, but my parents still want to have me when they are seriously ill, which is also a traditional Chinese virtue."

DISCUSSION

In the present study, we showed that there are a high willingness and demand for adult children to utilize EMES, which was associated with long-distance separation, children accompanying seniors to see a doctor, having a leave of absence to accompany the elderly to see a doctor, difficulty in taking time off, payment for EMES, the escort being trained and licensed, and the EMES being graded according to the elderly's conditions. Low outpatient satisfaction, instead of a high one, might be related to the children's willingness to use EMES. We also found that Chinese filial piety culture played an important role, including being concerned about the professional ethics of the escorts and accompanying the elderly to medical appointments when they were seriously ill.

The Chinese elderly population is characterized by a large base, advanced age, and increasing empty nesting, and the overall health status is not optimistic, with up to 75.0% of them suffering from one or more chronic diseases, resulting in a burden of more than 70% of the total disease burden [19]. The elderly are the group with more medical needs, requiring regular visits to hospitals and high demand for medical escort. However, the medical staffs in outpatient clinics are tight, and the capacity of the family to provide medical escort is insufficient. In our current survey, 68.2% of adult children were willing to utilize EMES, and most of them were willing to pay no more than the salary deducted for the leave, which revealed the children's urgent need for EMES [20].

We found that 68.5% of participants did not live with the elderly and the long-distance separation was one of the related factors to children's willingness to use EMES. The undesirable consequences of the one-child policy, rural-to-urban migration, the transformation of the family life cycle, and the trend of independent living for children after marriage are eroding the traditional family care of the elders, thus the "empty nest" phenomenon is becoming increasingly significant [21,22]. Children are not with the elderly or come back to visit them only once or twice a year, and the support system for the elders to

see the doctor is seriously inadequate. Moreover, older adults who are accompanied by their children prefer to visit tertiary hospitals to obtain better medical resources. However, older adults do not want to worry their children. The current data showed that 61.3% of children were too busy to accompany the elderly to a doctor's appointment, 72.2% of participants had to take time off work, and 39.9% had difficulties in asking for a leave, and do not have time until weekends. Hence, those who need to be accompanied by their children to seek medical care, unless they have a sudden emergency illness, often cannot do so in time and delay their condition. The interviewees noted: "I am busy with work and it is difficult to take time off, so I am willing to use EMES." "We do not live with the elderly and, when they are sick, we cannot accompany them to the hospital. We can pay for someone to accompany them to medical appointments."

The quantitative survey indicated that high outpatient satisfaction was positively associated with the children's willingness to utilize EMES. However, 76.2% of respondents accompanying older adults to medical appointments were not satisfied with their outpatient experience. The hospital outpatient clinic has medical and nursing staff to provide consultation and guidance to patients and their companions, but their workload is enormous due to a large number of outpatients, and they occasionally show impatience with patients' questions. Additionally, the interviewees assumed that: "Accompanying the elderly, the registration was fast, but the waiting time to see the doctor was long, especially the tests. Some tests could not even be done on the same day, and I only took a day off, so it was a hassle." These results were consistent with Yan et al. who showed that patients who went to tertiary hospitals reported low satisfaction in "patient waiting time in the hospital" and "attitudes of other health workers" [23]. Moreover, most respondents said that smart hospitals are not friendly to the elderly, the consultation process was cumbersome, there are many outpatient departments in the hospital, the environment is complicated, and the signs are not clear, making it difficult to find the right department. Due to the low outpatient satisfaction, children prefer to use EMES to improve the efficiency of visiting outpatient while still being able to work or rest well. On the other hand, tertiary hospitals face large challenges in patient satisfaction with outpatient care. The increasing attention to patient satisfaction evaluation in China is part of an international trend of patient-centered healthcare [24]. Therefore, measures must be adopted to improve patient satisfaction with outpatient care in future healthcare reforms.

Both the qualitative and quantitative data showed that the escorts being trained and licensed was an important influential factor in the children's willingness to use EMES. The interviewees especially emphasized the importance of professional ethics, caring, and being patient with the elderly and not abusing them. The physical and mental safety of the elderly should be ensured during the consultation. The core competencies of nursing personnel have been identified as the main factor affecting nursing effectiveness [25]. Therefore, it is necessary to strengthen the training of the medical escorts with core competencies through competency-based education. Competency is defined as "an observable ability of a health professional, integrating multiple components such as knowledge, skills, and attitudes. Since competencies are observable, they can be measured and assessed to ensure acquisition [26]. Competency-based education is an educational framework that has been used to train to assess nursing and health care [27]. According to the children's request in the interviews, the medical escorts must have the ability to ensure the safety of the elderly and humanistic care. Good humanistic care will bring the elderly a

good outpatient experience and has been received great importance in hospitals in recent years. Hence, how to ensure the safety of the elderly during the consultation and how to calm them according to different diseases requires specialized training in hospitals and nursing schools using competency-based education.

During both studies, we found that it was necessary to grade the EMES according to the conditions of the elderly. Some interviewees believed that older people still need their children to be with them, especially when they are seriously ill, which is also a reflection of the Chinese filial culture. In the quantitative survey, participants considered that those who are familiar with the consultation process (24.3%), interns or nursing students (28.6%), and nurse practitioners (27.7%) are appropriate medical escorts. Graded nursing care has been previously performed with patients with different diseases [28,29]. Non-neuronal chronic non-communicable diseases account for about 86.6% of total deaths in China, and the primary causes of death are stroke, ischemic heart disease, lung cancer, and chronic obstructive pulmonary disease [2,30]. These chronic diseases can cause dementia in the elderly, and incapacitate them to live independently, causing inconvenience for medical consultations and bringing great stress to their families. The self-care ability of the elderly and the severity of the disease can be divided into those with self-care ability, semi-disabled, and disabled [31]. People familiar with the hospital consultation process could provide services for the elderly with the stable condition and self-care abilities; nursing students and interns, a group with certain medical professional knowledge after training, could accompany the elderly with the stable condition and semi-disabled to the consultation; the elderly with more semi-disabled and disabled with the serious condition could be accompanied by nurse practitioners with clinical work experience. Hence, a comprehensive assessment and grading system is required, together with needs-led EMES [32].

CONCLUSION

In summary, adult children's willingness to utilize EMES for outpatient visits in China is high and urgent, especially for children with long-distance separation from the elderly, accompanying seniors to see a doctor and having a leave of absence, and difficulty in taking time off. Children are willing to pay for EMES, and the price must be within their reach. The escort must be trained and licensed, with emphasis on the importance of professional ethics, which is also an influential factor in the willingness of children to use services. The EMES should be graded according to the elders' condition. On the other hand, the importance of the Chinese culture of filial piety cannot be overlooked. For example, there is no substitute for the companionship of children, especially when the elderly are seriously ill. The children's willingness is also influenced by outpatient satisfaction. A low outpatient satisfaction can be physically and emotionally exhausting for both children and seniors.

Therefore, to meet the needs of children and to solve the dilemma of the elderly seeing a doctor, we need to promote EMES in conjunction with the Chinese filial culture. By strengthening the standardized training of escorts, improving core competencies, and grading the EMES according to the elderly's condition, the children and the elderly can use the service with confidence. Finally, it is also essential to take measures to improve outpatient satisfaction.

LIMITATIONS

Our current study also has some limitations. First, the study population

was from three cities in Jiangsu Province, which economy ranked second in China and did not reflect the situation in other provinces. Second, the cross-sectional study might have been biased. Additionally, the services and the number of outpatient clinics vary from hospital to hospital which also affects the participants' experience of seeing a doctor. Third, the qualitative study suffered from memory bias. For example, when we asked questions about the feelings of accompanying the elderly to medical experiences, participants had to recall what happened in the hospital during that time, which was impossible to be 100% correct.

AUTHORS' CONTRIBUTIONS

Huanhuan Zhou, Jue Lu, Linlin Zhang and Xiaona Li designed the study. Huanhuan Zhou, Yuhan Wang, Jie Shi, Shiyu Ji, Xianyu Hu, Shangqu Luo, Dingding Zhou and Lining Wang collect the data. Huanhuan Zhou and Xiaona Li had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis and drafted the manuscript. All authors critically revise the manuscript for important intellectual content and agree to be accountable for all aspects of the study.

DECLARATION OF CONFLICTING INTERESTS

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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ETHICS APPROVAL

This study was approved by the Changzhou No. 2 People's Hospital Ethics Committee (No. [2021] KY318-01). It was performed in accordance with the Declaration of Helsinki and all methods were carried out in accordance with relevant guidelines and regulations.

INFORMED CONSENT

In the qualitative phase, written informed consent was obtained from all participants at the beginning of interview. In the quantitative phase, information about the purpose of the survey, the participant's rights, confidentiality, etc. were included in a preamble to the survey items and informed consent was implied by the respondent's completion of the questionnaire.

REFERENCES

1. Department of Economic and Social Affairs Population Division, European Union. World Population Ageing 2019. 2020.
2. National bureau of statistics of China. 2021.
3. Gu TT, Yuan JF, Li LZ, Shao QH, Zheng CJ. Demand for community-based care services and its influencing factors among the elderly in affordable housing communities: a case study in Nanjing City. BMC Health Serv Res. 2020;20(1):240-241.
4. China Research Center on Aging. Report on the living Conditions of the elderly in Urban and rural China. 2018.
5. Proietti M, Cesari M. Frailty: What Is It?. Adv Exp Med Biol. 2020; 1216(2):1-7.

6. Fang FE, Xie CL, Schenkel JA, Wu C, Long Q, Cui H, et al. A research agenda for ageing in China in the 21st century (2nd edition): Focusing on basic and translational research, long-term care, policy and social networks. *Ageing Res Rev.* 2020; 64(2): 101170-101174.
7. Zhang C, Cai Y, Xue Y, et L. Exploring the influencing factors of quality of life among the empty nesters in Shanxi, China: a structural equation model. *Health Qual Life Outcomes.* 2021;19(1):156. doi: 10.1186/s12955-021-01793-x.
8. Lu J, Zhang C, Xue Y, Zheng X, Yang X, Lu J, et al. Moderating effect of social support on depression and health promoting lifestyle for Chinese empty nesters: a cross-sectional study. *J Afect Disord.* 2019; 256(2): 495-508.
9. Zhang Q, Li MY, Wu YJ. Smart home for elderly care: development and challenges in China. *BMC Geriatr.* 2020; 20(1): 315-318.
10. Yang L, Wang L, Dai X. Rural-urban and gender differences in the association between community care services and elderly individuals' mental health: a case from Shaanxi Province, China. *BMC Health Serv Res.* 2021; 21(1): 101-106. .
11. Yang L, Wang L, Dai X, Dai X. Utilisation of community care services and self-rated health among elderly population in China: a survey-based analysis with propensity score matching method. *BMC Public Health.* 2021; 21(1): 1900-1936.
12. Hu B, Li B, Wang J, Shi C. Home and community care for older people in urban China: Receipt of services and sources of payment. *Health Soc Care Community.* 2020; 28(1): 225-235.
13. Cho SH. Older people's willingness to use home care nursing services. *J Adv Nurs.* 2005; 51(2):166-173.
14. Hu H, Si YF, Li BQ. Decomposing Inequality in long-term care need among older adults with chronic diseases in China: a life course perspective. *Int J Environ Res Public Health.* 2020; 17(7): 2550-2559.
15. Zhang M, Chen C, Du Y, Wang S, Rask M. Multidimensional factors affecting care needs in daily living among community-dwelling older adults: a structural equation modelling approach. *J Nurs Manag.* 2021;29(5):1207-1219.
16. Gong N, Meng Y, Hu Q. Obstacles to access to community care in urban senior-only households: a qualitative study. *BMC Geriatr.* 2022;22(1):119-122.
17. Zhang L, Zeng Y, Wang L, Fang Y. Urban-rural differences in long-term care service status and needs among home-based elderly people in China. *Int J Environ Res Public Health.* 2020; 17(5): 1698-1701.
18. Guetterman TC, Fetters MD, Creswell JW. Integrating quantitative and qualitative results in health science mixed methods research through joint displays. *Ann Fam Med.* 2015; 13(6): 554-561.
19. Department of Planning, Development and Informatization of Chinese Government Network. *Healthy China Initiative 2019-2030.*
20. Zhou Y, Wang W, Sun Y, Qian W, Liu Z, Wang R, et al. The prevalence and risk factors of psychological disturbances of frontline medical staff in china under the COVID-19 epidemic: Workload should be concerned. *J Affect Disord.* 2020; 277(5): 510-514.
21. Su H, Cao J, Zhou Y, Wang L, Xing L. The mediating effect of coping style on personality and mental health among elderly Chinese empty-nester: a cross-sectional study. *Arch Gerontol Geriatr.* 2018;75:197-201.
22. Fang EF, Scheibye-Knudsen M, Jahn HJ, Juan Li, Ling L, Guo H, et al. A research agenda for aging in China in the 21st century. *Ageing Res Rev.* 2015; 24(6): 197-205.
23. Yan J, Yao J, Zhao D. Patient satisfaction with outpatient care in China: a comparison of public secondary and tertiary hospitals. *Int J Qual Health Care.* 2021; 33(1): 1-3.
24. Hu L, Zhou BP, Liu S, Wang Z, Liu Y. Outpatient Satisfaction with Tertiary Hospitals in China: The Role of Sociodemographic Characteristics. *Int J Environ Res Public Health.* 2019;16(19):3518.
25. Song S, Li XY, Bell SA, Yang X, Zhang W, Arbor A. Emergency Response: A Cross-sectional Study of Core Competencies for Nurses Regarding Major Infectious Disease Outbreaks. *J Emerg Nurs.* 2021; 47(6): 902-913.
26. Chan TE, Lockhart JS, Schreiber JB, Kronk R. Determining nurse practitioner core competencies using a Delphi approach. *J Am Assoc Nurse Pract.* 2020; 32(3): 200-217..
27. Teunissen PW, Kogan JR, Cate OT, Gruppen LD, Lingard LA. Learning in Practice: A Valuation of Context in Time-Variable Medical Training. *Acad Med.* 2018; 93(3): 22-26. .
28. Herling SF, Greve IE, Vasilevskis EE, et al. Interventions for preventing intensive care unit delirium in adults. *Cochrane Database Syst Rev.* 2018; 11(11): 9780-9783..
29. Sun H, Liu H, Li J, Wang X. The Patterns of Graded Psychological Nursing Care for Patients after Cardiothoracic Surgeries. *Iran J Public Health.* 2017; 46(7): 899-905. .
30. Zhou M, Wang H, Zeng X, Zhu J, Chen W, Li x, et al. Mortality, morbidity, and risk factors in China and its provinces, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet.* 2019; 394(10): 1145-1158.
31. Wang LM, Chen ZH, Zhang M, Zhao ZP, Huang ZJ, Li C, et al. Study of the prevalence and disease burden of chronic disease in the elderly in China. *Zhonghua Liu Xing Bing Xue Za Zhi.* 2019; 40(3): 277-283..
32. Wu J, Chen S, Wen H, Yi Y, Liao XY. Health status, care needs, and assessment for beneficiaries with or without dementia in a public long-term care insurance pilot in Guangzhou, China. *BMC Health Serv Res.* 2020; 20(1): 1125-1127.