

Hospice Care Providers' Knowledge, Attitudes and Practices in China: A Cross-sectional Study

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Abstract

Background: In recently years, China has been growing awareness about the hospice service movement although hospice care was initially introduced 30 years ago. Hospice care providers' knowledge, attitudes, self-efficiency, and practices status in China should be investigated. This study aims to survey the general actuality of hospice care providers' knowledge, attitudes, and practices of hospice care (KAPHC) in five cities in China, and explore relevant influencing factors.

Method: Relying on our KAPHC scale, we randomly surveyed 3647 valid health care providers in five sampled cities of China in 2019, which respectively represent the north, northeast, east, central, and southwest area. In each city, 14 institutions were selected and 50 health providers were surveyed in each institution. Increment of voluntary participation was accepted. The scaling outcomes were compared among each sampled city-groups with Chi-square test or ANOVA. Multiple correspondence analyses were also performed for further results.

Results: Of all, 41.46% providers had real experience in providing hospice care, and 58.68% confirmed willingness of providing. The overall knowledge correct rate was 57.13%. The average scores of threats, benefits, barriers, subjective norms, confidence, and self-report behaviour items were 15.40, 41.56, 16.75, 15.65, 41.56, and 38.61. Providers from eastern China, willing to provide hospice care, or experienced death witness in providing hospice care, proved better score in knowledge, threats, benefits, barriers, subjective norms, confidence, and self-report behaviour ($P < 0.05$).

Conclusions: The investigation reflected urgent need for systematic training of professional knowledge and skills on hospice care for health care providers. Governments' attention and policy measures are crucial as most Chinese hospice care providers practiced as "organization actors". More attention was needed on balanced development of different areas.

Background

Hospice care improves terminal patients' life quality, and it is the inevitable product of social civilization. It has rapidly expanded through some western developed countries and successfully development since 1967. With national differences in focus and application, it has spread throughout the world ^[1]. However, in mainland China, hospice care has been developing slowly since it was introduced from 30 years ago. In the year of 2015, the Economist Intelligence Unit reports that China's overall rank of 71st out of 80 countries reflects its limited availability and the poor quality of hospice care in general ^[2].

Till recently years, China has been growing awareness about this movement and it is agreed well with the principle of Health China 2030. Mainly at the municipal level, a series of government policies shifts signaled a trend of greater support and investment in hospice care services. Some first-tier cities like Shanghai have set new targets and policies to increase access to hospice care ^[3]. In 2017, the national health and family planning commission carried out hospice care pilot work in five cities of China, including Beijing, Shanghai, Changchun in Jilin province, Luoyang in Henan, and Deyang in Sichuan province, which distributed in five locations across the country, and focus the hospice care delivery at the grass level. General Practitioners (GPs) and nurses in community health centers (CHCs) or township health centers (THCs) are the core group in this recent movement.

A well-educated hospice care provider can enrich experiences for patients and ease caregiving responsibilities and emotional stress for families. The rising need of hospice care call for more equipped doctors and nurses to provide it. There is evidence that GPs were more likely to feel confident with increasing experience of home care and of caring for cancer patients ^[4] as well as with a higher number of palliative trajectories for which they had been responsible ^[5].

Recent investigations highlight the need for timelier and more effective end of life care, however little study revealed the reality of China's status of their knowledge, attitudes, and practices of hospice care providers. Studies conducted in mainland China showed a change on their target population, from nurses ^[6-8] to specialized doctors ^[9] and from a single group to multidisciplinary medical team ^[10, 11]. However, the majority of those conducted in medical institutions were still on specialist physician and nurses in oncology, intensive care unit, etc. ^[12-14] Furthermore, till recently in China, there is little literature evidence on exploring the characteristics of localization.

In the current study, we surveyed the general actuality of hospice care providers' knowledge, attitudes and practices of hospice care in five cities, from west to east in China. Furthermore, relevant influencing factors were explored for probably suggestions to practice improvement and relevant policies decision-making.

Methods

Study design and setting

The study planned to survey 14 institutions in each five cities, and to choose randomly 50 health care providers in each institution. The five sampled cities in China in this study refer to as City A to City E, respectively represent the area of north (City-A), northeast (City-B), east (City-C), central (City-D), and southwest (City-E). And if some institutions were newly approved pilot of hospice care in 2019, they also can be voluntary to take part in the survey. Thus, the total samplings were estimated to be more than 3500. The anonymous, cross-sectional questionnaire survey for particular group was conducted, through the SO JUMP, an online Chinese questionnaire platform. The inclusion criteria were health providers working in health care institution in the cities had voluntarily signed up for the survey in prenotice enrolment. And the exclusion criteria were other care providers in health care institutions or not in voluntary registration book, or those staff who were unable to complete the questionnaire independently. To minimise the probably bias, we conducted a concentrated training in Beijing for all quality controllers from each city and investigate delegates from primary service institutions one week ahead.

Scale

A structured self-report questionnaire consisting of five parts administered to all subjects. It was health providers' Knowledge, Attitudes, and Practices of Hospice Care (KAPHC) constructed more suitable for Chinese^[15]. The four parts of the questionnaire included questions on demographic characteristics, knowledge (15items), attitudes (24items with 4 sub-concepts) and practices (22items with 2 sub-concepts) on providing hospice care.

The knowledge sheet included questions about concept and philosophy, psychosocial and spiritual care, management of pain and other symptoms, opioid use, policies and localization problems, etc. The four sub-concepts of attitudes were threats (5 items), benefits of life quality promotion and death preparation (10 items), barriers (5 items) and subjective norms (4 items) for providing hospice care. The two sub-concepts of practices were confidence and self-reported practices.

Statistics

As scaling outcomes, the scores of knowledge, attitude and practices compared by deferent groups in different cities. Statistical analyses were performed using commercial software IBM SPSS Statistics 24.0 (IBM Corporation, Armonk, NY), the threshold of statistical significance set at $P < 0.05$ (2-tailed). The Chi-square test or ANOVA were used to compare the characteristics and scores of the 5 city-groups. Multiple correspondence analyses were also performed. The inference in correspondence analyses is whether certain levels of one characteristic (eg, city) are associated with some levels of another characteristic (eg, knowledge).

Results

From March 18th to 31th in 2019, total 3647 valid out of 3653 questionnaires were returned (valid rate 99.8%). Participants were recruited from 80 grass medical institutes of 5 sampled cities in China. Of all valid questionnaires, 756(20.73%) were from City-A, 593(16.26%) were from City-B, 687(18.84%) from City-C, 580(15.90%) from City-D and 1031(28.27%) were from City-E. The average age was 35.65 ± 9.072 years old. The social and demographic characteristics of study participants see Table 1.

Table 1
The Social and Demographic Characteristics of Study Participants

City		A	B	C	D	E	Total	χ^2
Gender	male	130(17.20)	89(15.01)	115(16.74)	153(26.38)	228(22.11)	715(19.61)	35.32**
	female	626(82.80)	504(84.99)	572(83.26)	427(73.62)	803(77.89)	2932(80.39)	
Age	29 -	169(22.35)	128(21.59)	129(18.78)	200(34.48)	394(38.22)	1020(27.97)	162.23**
	30-39	314(41.53)	245(41.32)	306(44.54)	232(40.00)	433(42.00)	1530(41.95)	
	40-49	191(25.26)	149(25.13)	188(27.37)	111(19.14)	155(15.03)	794(21.77)	
	50+	82(10.85)	71(11.97)	64(9.32)	37(6.38)	49(4.75)	303(8.31)	
Nationality	han	721(95.37)	557(93.93)	674(98.11)	567(97.76)	1025(99.42)	3544(97.18)	53.53**
	non-han	35(4.63)	36(6.07)	13(1.89)	13(2.24)	6(0.58)	103(2.82)	
Religious Belief	yes	37(4.89)	44(7.42)	73(10.63)	58(10.00)	120(11.64)	332(9.10)	28.72**
	no	719(95.11)	549(92.58)	614(89.37)	522(90.00)	911(88.36)	3315(90.90)	
Marriage status	unmarried	121(16.01)	119(20.07)	131(19.07)	127(21.90)	239(23.18)	737(20.21)	21.78**
	married	620(82.01)	458(77.23)	536(78.02)	444(76.55)	759(73.62)	2817(77.24)	
	divorced or widowed	15(1.98)	16(2.70)	20(2.91)	9(1.55)	33(3.20)	93(2.55)	
Education status	bachelor or above	487(64.42)	306(51.60)	502(73.07)	330(56.90)	457(44.33)	2082(57.09)	175.24**
	college	225(29.76)	220(37.10)	159(23.14)	214(36.90)	479(46.46)	1297(35.56)	
	high school or less	44(5.82)	67(11.30)	26(3.78)	36(6.21)	95(9.21)	268(7.35)	
Job	administrator	74(9.79)	48(8.09)	65(9.46)	116(20.00)	107(10.38)	410(11.24)	126.14**
	doctor	289(38.23)	230(38.79)	276(40.17)	170(29.31)	315(30.55)	1280(35.10)	
	nurse	310(41.01)	262(44.18)	278(40.47)	180(31.03)	452(43.84)	1482(40.64)	
	medical technician	83(10.98)	53(8.94)	68(9.90)	114(19.66)	157(15.23)	475(13.02)	
Profession title	senior	91(12.04)	73(12.31)	53(7.71)	38(6.55)	71(6.89)	326(8.94)	198.87**
	intermediate	296(39.15)	136(22.93)	328(47.74)	189(32.59)	237(22.99)	1186(32.52)	
	junior	311(41.14)	314(52.95)	267(38.86)	285(49.14)	595(57.71)	1772(48.59)	
	none	58(7.67)	70(11.80)	39(5.68)	68(11.72)	128(12.42)	363(9.95)	
Organization type	secondary or above	111(14.68)	178(30.02)	112(16.30)	341(58.79)	592(57.42)	1334(36.58)	1062.16**
	CHC or THC	522(69.05)	415(69.98)	510(74.24)	179(30.86)	288(27.93)	1914(52.48)	
	specialized hospital	0(0.00)	0(0.00)	53(7.71)	25(4.31)	119(11.54)	197(5.40)	
	rehabilitation nursing	123(16.27)	0(0.00)	12(1.75)	35(6.03)	32(3.10)	202(5.54)	
Commonweal character	public	633(83.73)	579(97.64)	675(98.25)	492(84.83)	932(90.40)	3311(90.79)	148.90**
	non-public	123(16.27)	14(2.36)	12(1.75)	88(15.17)	99(9.60)	336(9.21)	

*P<0.05,**P<0.01

CHC, community health center; THC, township health center.

City		A	B	C	D	E	Total	χ^2
Experience of death witness	yes	536(70.90)	367(61.89)	590(85.88)	392(67.59)	788(76.43)	2673(73.29)	112.06**
	no	220(29.10)	226(38.11)	97(14.12)	188(32.41)	243(23.57)	974(26.71)	
Experience in providing hospice care	yes	150(19.84)	160(26.98)	437(63.61)	305(52.59)	460(44.62)	1512(41.46)	369.49**
	no	606(80.16)	433(73.02)	250(36.39)	275(47.41)	571(55.38)	2135(58.54)	
Willingness of providing	yes	338(44.71)	287(48.40)	471(68.56)	421(72.59)	623(60.43)	2140(58.68)	161.922**
	no	418(55.29)	306(51.60)	216(31.44)	159(27.41)	408(39.57)	1507(41.32)	
Total		756(100.0)	593(100.0)	687(100.0)	580(100.0)	1031(100.0)	3647(100.0)	
*P<0.05,**P<0.01								
CHC, community health center; THC, township health center.								

For each item in knowledge scale, the detail choices comparisons of respondents in deferent five cities see Table 2. And the multiple comparisons showed that the total scores among 5 cities were statistically different ($F=80.612$, $P<0.01$), and ranks in 5 cities were $C>D>E>B>A$ (Tamhane, $P<0.05$).

Table 2
The Knowledge Scaling of Each Item for Respondents from Different Cities

Knowledge items	City	N	Mean	SD	SE	95% CI	F	Sig.
1. The provision of hospice care requires emotional detachment.	A	756	0.1	0.3	0.01	0.08~0.12	16.43	<0.01**
	B	593	0.14	0.34	0.01	0.11~0.16		
	C	687	0.24	0.43	0.02	0.21~0.28		
	D	580	0.16	0.36	0.02	0.13~0.18		
	E	1031	0.13	0.34	0.01	0.11~0.15		
	Total	3647	0.15	0.36	0.01	0.14~0.16		
2. Psychological, social, and spiritual problems are paramount to the hospice care team who give appropriate consultation and management.	A	756	0.86	0.35	0.01	0.83~0.88	7.37	<0.01**
	B	593	0.89	0.32	0.01	0.86~0.91		
	C	687	0.89	0.31	0.01	0.87~0.92		
	D	580	0.94	0.24	0.01	0.92~0.96		
	E	1031	0.91	0.28	0.01	0.90~0.93		
	Total	3647	0.9	0.3	0.01	0.89~0.91		
3. Three steps make up the WHO analgesic ladder.	A	756	0.78	0.41	0.01	0.75~0.81	13.51	<0.01**
	B	593	0.82	0.38	0.02	0.79~0.85		
	C	687	0.91	0.28	0.01	0.89~0.94		
	D	580	0.87	0.34	0.01	0.84~0.89		
	E	1031	0.86	0.35	0.01	0.84~0.88		
	Total	3647	0.85	0.36	0.01	0.84~0.86		
4. The hospice care team provides bereavement support for the family after the patient's death.	A	756	0.65	0.48	0.02	0.62~0.69	31.19	<0.01**
	B	593	0.61	0.49	0.02	0.57~0.65		
	C	687	0.84	0.37	0.01	0.81~0.86		
	D	580	0.8	0.4	0.02	0.77~0.83		
	E	1031	0.68	0.47	0.01	0.65~0.71		
	Total	3647	0.71	0.45	0.01	0.70~0.73		
5. Home Hospice care is in line with China's folk customs.	A	756	0.53	0.5	0.02	0.49~0.56	28.53	<0.01**
	B	593	0.61	0.49	0.02	0.57~0.65		
	C	687	0.79	0.41	0.02	0.76~0.82		
	D	580	0.66	0.47	0.02	0.63~0.70		
	E	1031	0.65	0.48	0.01	0.62~0.68		
	Total	3647	0.64	0.48	0.01	0.63~0.66		
6. For child bereavement care, children can attend funerals and even participate in preparations.	A	756	0.3	0.46	0.02	0.26~0.33	21.08	<0.01**
	B	593	0.29	0.45	0.02	0.26~0.33		
	C	687	0.5	0.5	0.02	0.46~0.54		

*P<0.05,**P<0.01

Knowledge items	City	N	Mean	SD	SE	95% CI	F	Sig.
	D	580	0.34	0.47	0.02	0.30~0.38		
	E	1031	0.36	0.48	0.01	0.33~0.39		
	Total	3647	0.36	0.48	0.01	0.34~0.37		
7. During the terminal stages of an illness, drugs that can cause respiratory depression are appropriate for the treatment of severe dyspnea.	A	756	0.27	0.45	0.02	0.24~0.31	2.79	0.025*
	B	593	0.33	0.47	0.02	0.29~0.37		
	C	687	0.28	0.45	0.02	0.25~0.31		
	D	580	0.33	0.47	0.02	0.29~0.36		
	E	1031	0.33	0.47	0.01	0.30~0.36		
	Total	3647	0.31	0.46	0.01	0.29~0.32		
8. To use Mirabilite in Shenque acupoint application can relieve ascites.	A	756	0.28	0.45	0.02	0.24~0.31	70.17	<0.01**
	B	593	0.4	0.49	0.02	0.36~0.44		
	C	687	0.68	0.47	0.02	0.65~0.72		
	D	580	0.53	0.5	0.02	0.49~0.57		
	E	1031	0.48	0.5	0.02	0.45~0.51		
	Total	3647	0.47	0.5	0.01	0.46~0.49		
9. Pain threshold is lowered by fatigue or anxiety.	A	756	0.38	0.49	0.02	0.35~0.42	4.98	0.001**
	B	593	0.38	0.49	0.02	0.34~0.42		
	C	687	0.45	0.5	0.02	0.41~0.48		
	D	580	0.41	0.49	0.02	0.37~0.45		
	E	1031	0.34	0.48	0.01	0.31~0.37		
	Total	3647	0.39	0.49	0.01	0.37~0.40		
10. Men generally reconcile their grief more quickly than women.	A	756	0.25	0.43	0.02	0.22~0.28	37.71	<0.01**
	B	593	0.27	0.45	0.02	0.24~0.31		
	C	687	0.46	0.5	0.02	0.42~0.50		
	D	580	0.18	0.38	0.02	0.14~0.21		
	E	1031	0.26	0.44	0.01	0.24~0.29		
	Total	3647	0.28	0.45	0.01	0.27~0.30		
11. Individuals who are taking morphine should also follow a bowel regimen.	A	756	0.42	0.49	0.02	0.38~0.45	17.22	<0.01**
	B	593	0.5	0.5	0.02	0.46~0.54		
	C	687	0.63	0.48	0.02	0.59~0.66		
	D	580	0.53	0.5	0.02	0.49~0.57		
	E	1031	0.55	0.5	0.02	0.52~0.59		
	Total	3647	0.53	0.5	0.01	0.51~0.54		
12. To strengthen the construction of hospice care institutions was written into the "healthy China 2030" plan.	A	756	0.71	0.45	0.02	0.68~0.75	37.15	<0.01**

*P<0.05,**P<0.01

Knowledge items	City	N	Mean	SD	SE	95% CI	F	Sig.
	B	593	0.76	0.43	0.02	0.72~0.79		
	C	687	0.9	0.29	0.01	0.88~0.93		
	D	580	0.91	0.29	0.01	0.88~0.93		
	E	1031	0.84	0.36	0.01	0.82~0.87		
	Total	3647	0.82	0.38	0.01	0.81~0.84		
13. Morphine point injections can be used for relieve cancer pain in the terminal period.	A	756	0.66	0.47	0.02	0.63~0.70	13.92	<0.01**
	B	593	0.73	0.45	0.02	0.69~0.76		
	C	687	0.78	0.42	0.02	0.75~0.81		
	D	580	0.82	0.38	0.02	0.79~0.85		
	E	1031	0.7	0.46	0.01	0.67~0.73		
	Total	3647	0.73	0.44	0.01	0.72~0.74		
14. The most authoritative guidelines on health care planning recommend that hospice care should be provided by whom?	A	756	0.88	0.33	0.01	0.85~0.90	17.64	<0.01**
	B	593	0.87	0.34	0.01	0.84~0.90		
	C	687	0.97	0.18	0.01	0.95~0.98		
	D	580	0.96	0.2	0.01	0.94~0.97		
	E	1031	0.91	0.29	0.01	0.89~0.93		
	Total	3647	0.91	0.28	0	0.91~0.92		
15. Which were not the purpose of melodio therapy?	A	756	0.47	0.5	0.02	0.44~0.51	17.40	<0.01**
	B	593	0.44	0.5	0.02	0.40~0.48		
	C	687	0.64	0.48	0.02	0.60~0.68		
	D	580	0.52	0.5	0.02	0.48~0.56		
	E	1031	0.47	0.5	0.02	0.44~0.50		
	Total	3647	0.51	0.5	0.01	0.49~0.52		
Total score	A	756	7.54	2.98	0.11	7.33~7.75	80.612	<0.01**
	B	593	8.03	2.93	0.12	7.80~8.27		
	C	687	9.95	2.64	0.1	9.75~10.15		
	D	580	8.94	2.24	0.09	8.76~9.13		
	E	1031	8.49	2.66	0.08	8.33~8.66		
	Total	3647	8.57	2.83	0.05	8.48~8.66		
*P<0.05,**P<0.01								

Table 3 showed attitudes and practices scaling for respondents from different cities. Also with the results of multiple comparisons, the ranks of attitude in five cities were C>D, E>B, A (Tamhane, P<0.01), of confidence were C, D>E>A, B (Tamhane, P<0.01), and of self-report practice were C, E>D>B>A (Tamhane, P<0.05). The mean scores of four attitude sub-concepts were 15.40, 41.56, 16.75 and 15.65, respectively (Table 3). These indicated positive attitudes towards providing hospice care. The most percent respondents agree about the threats of providing hospice care were: "I feel guilty when a patient of mine dies" (51.0%), "advanced cancer patient is hopeless for cure"

(44.3%). About the barriers toward providing hospice care, 59.0% responders agree it is a barrier that “Advanced cancer patients have many difficult symptoms”. On the other hand, the higher-score items in subjective norms included: “It is meaningful” (4.25), and “It is a part of my duty” (3.94).

Table 3
The Attitude, Confidence, and Self-report practice Scaling for Respondents from Different Cities

Scale	City	N	Mean	SD	S. E	95% CI	F	Sig.
Attitude	A	756	88.41	11.58	0.42	87.58~89.24	64.468	P<0.01
	B	593	88.73	11.77	0.48	87.78~89.68		
	C	687	96.99	13.78	0.53	95.96~98.02		
	D	580	92.80	10.24	0.43	91.97~93.64		
	E	1031	93.50	11.27	0.35	92.81~94.19		
	Total	3647	92.22	12.18	0.20	91.82~92.61		
Confidence	A	756	39.37	7.99	0.29	38.80~39.94	40.98	P<0.01
	B	593	39.62	8.65	0.36	38.92~40.32		
	C	687	43.60	7.84	0.30	43.01~44.18		
	D	580	42.79	7.16	0.30	42.21~43.38		
	E	1031	42.23	7.59	0.24	41.77~42.70		
	Total	3647	41.56	8.01	0.13	41.30~41.82		
Self-report practice	A	756	33.33	11.60	0.42	32.50~34.16	100.85	P<0.01
	B	593	35.53	11.33	0.47	34.62~36.45		
	C	687	41.93	9.80	0.37	41.20~42.66		
	D	580	40.43	8.93	0.37	39.70~41.16		
	E	1031	41	9.36	0.29	40.43~41.57		
	Total	3647	38.61	10.76	0.18	38.26~38.95		

The multiple correspondence analyses indicated the most possible influencing factors of Chinese hospice care providers’ knowledge, attitude, confidence and self-report practice, details see Table 4.

Table 4
Multiple Correspondence Analyses of Knowledge, Attitude, Confidence and Self-report practice

Model	Variables	B	S.E.	t	Sig.
Knowledge	(Constant)	6.088	0.208	29.298	<0.001**
	City-C	1.24	0.119	10.39	<0.001**
	Willingness on providing hospice care	1.076	0.095	11.371	<0.001**
	Education	0.393	0.074	5.316	<0.001**
	Experience in providing hospice care	0.612	0.099	6.159	<0.001**
	Professional title	0.199	0.057	3.476	0.001**
	Rehabilitation nursing	-1.033	0.199	-5.176	<0.001**
	Doctor	0.384	0.097	3.95	<0.001**
	CHC or THC	-0.302	0.095	-3.183	0.001**
	Experience of death witness	0.246	0.104	2.37	0.018*
Attitude	(Constant)	86.371	0.566	152.641	<0.001**
	Willingness on providing hospice care	8.636	0.384	22.502	<0.001**
	City-C	4.625	0.485	9.545	<0.001**
	CHC or THC	-3.207	0.402	-7.969	<0.001**
	Experience in providing hospice care	2.146	0.406	5.293	<0.001**
	Experience of death witness	1.832	0.414	4.423	<0.001**
	Specialized hospital	3.080	0.816	3.772	<0.001**
	Rehabilitation nursing	-2.528	0.806	-3.135	0.002**
	Married	-0.867	0.423	-2.051	0.040*
Confidence	(Constant)	37.354	0.312	119.613	<0.001**
	Willingness on providing hospice care	5.742	0.256	22.454	<0.001**
	Experience in providing hospice care	1.443	0.271	5.325	<0.001**
	CHC or THC	-1.765	0.26	-6.788	<0.001**
	City-C	1.678	0.324	5.183	<0.001**
	Experience of death witness	1.027	0.277	3.713	<0.001**
	specialized hospital	1.77	0.541	3.27	0.001**
Self-report practice	(Constant)	30.909	0.444	69.626	<0.001**
	Experience in providing hospice care	4.596	0.341	13.466	<0.001**
	Willingness on providing hospice care	6.118	0.324	18.867	<0.001**
	CHC or THC	-4.434	0.317	-13.98	<0.001**
	Experience of death witness	2.548	0.368	6.932	<0.001**

*P<0.05,**P<0.01.

CHC, community health center; THC, township health center.

Model	Variables	B	S.E.	t	Sig.
	Doctor	3.088	0.413	7.48	<0.001**
	City-C	2.755	0.406	6.787	<0.001**
	Nurse	1.869	0.415	4.505	<0.001**
	Gender	1.525	0.408	3.742	<0.001**
*P<0.05,**P<0.01.					
CHC, community health center; THC, township health center.					

Hospice care providers in City-C, providers who willing to provide hospice care, who have the experience of death witness or experience in providing hospice care, proved better in knowledge, attitude, confidence and self-report behaviour. And those who work in CHC or THC did worse in knowledge, attitude, confidence and self-report behaviour. Moreover, a) of knowledge, providers with the higher education level, professional title, or as a doctor, would get higher scores and providers in rehabilitation nursing scored lower; b) of attitude, providers more aged or working in rehabilitation nursing scored lower; c) providers from specialized hospital showed more confidence in practicing; d) of self-report behaviour, doctor and nurse scored higher and men scored higher than women.

The correlation analysis showed high pair wise correlations (P<0.01) between every two measurement dimensions among knowledge, attitude, confidence and self-report practice, details see Table 5.

Table 5
Correlation Analysis of Knowledge, Attitude, Confidence and Self-report Practice

Variables	Knowledge	Attitude	Confidence	Self-report Practice
Knowledge	1	0.363**	0.336**	0.331**
Attitude	0.363**	1	0.639**	0.516**
Confidence	0.336**	0.639**	1	0.631**
Self-report Practice	0.331**	0.516**	0.631**	1
*P<0.05,**P<0.01				

Discussion

Overall Situation

In this investigation, there were 1512(41.46%) providers had real experience in providing hospice care, and 58.68% of all confirmed their willingness of providing. It proved those grassroots health service providers' supports in the national hospice movement, from the aspects of their emotional and practical involvement. Furthermore, findings showed that providers who willing to provide hospice care, who have the experience of death witness or experience in providing hospice care, proved better in knowledge, attitude, confidence and self-report practice, which was partly proved by some previous researches [6, 11, 16, 17]. We could know from that the exploration and practice of service provider is the key to break through the bottleneck. Primary medical institutions had accumulated certain manpower reserves and practical experience through institutional investment and talent training. As the country attached great importance to it and governments at all levels took active measures, the cause of hospice care in China has developed as if it woke up in winter and waited for the spring to blossom [18]. Hospice care in China has a distinct national characteristic of government leadership and policy support [3, 19]. What about the other side of the coin? This investigation also showed a negative correlation between primary medical institutions and knowledge, attitude, confidence and practice, which probably indicated a relatively poor service quality and most urgent need for systematic training in the main force. Furthermore, systemic barriers to provision of hospice care among GPs need to be identified and addressed. [20, 21]

Among the five sampled area, hospice care providers in City-C proved better in knowledge, attitude and behavior. This reflects the uneven development of hospice services across the country. Hospice services in the east of China have a long history. As early as October 1988, Shanghai Nanhui Elderly Nursing Hospital was established, taking the lead in carrying out hospice care services [22]. And till the year of

2018, Shanghai was the only city in the nationwide where the local government has issued a statement and special funds to promote hospice care^[3,23]. It also played a great role in stimulating the development of surrounding eastern cities.

Knowledge

The overall correct rate of hospice care providers in the investigation was 57.13% (8.57/15), which was close to 60% as the calibrating in original scale design. We thought the result is patchy at best. Seeing into each item, hospice care providers were lack of cognition in philosophy and principles of hospice care, pain and symptom management, opioid use, and psychosocial and spiritual care.

The first item "the provision of hospice care requires emotional detachment" was quoting from PCQN developed by Ross M M et al. The difficulty index of this item was 0.67~0.93 for sampled nurses in her study^[24]. In this study, it was the most difficult item with the difficulty index of 0.15, and from 0.1 to 0.24 in the different five sampled areas, also as low as the difficulty of 0.19 in the pre-testing ($u=1.11$, $P=0.133>0.05$). Apart from possible confounders of the scale translated into Chinese, it does reflect the lack of understanding among the respondents. Health service providers often must face the death in routine clinical work, and it is even more common for hospice caregivers in taking care for dying patients. It is undoubtedly a great challenge to meet all needs including emotional needs of the dying patients, thus hospice caregivers need to be prepared well and have a positive attitude. Chinese hospice providers practiced worse on item No.7, No.9 and No.10 in this investigation than those in PCQN as the correct rate were 0.31, 0.39, and 0.28 respectively. The sixth item was about hospice care for special people, with a high difficulty and low correct rate of 0.36. If hospice care givers never be systemically well trained before, they would be more likely to answer wrong influenced by their traditional ideas and unique bereavement culture in China^[25]. The eighth item was for Traditional Chinese Medicine (TCM) in hospice care. Its total correct rate was 0.47, lower than pre-testing, and furthermore in City-A the rate was as low as 0.28. It showed a weak point of knowledge for hospice caregivers and there was also an uneven among different areas. In the hospice movement in China, as a local characteristic, it is valuable and necessary to actively create conditions to explore and develop some TCM appropriate techniques, especially for the symptom alleviation and the quality of life improvement. However, in modern medicine the speed of TCM development was not so fast to match its broad and profound theory system.^[26,27] To master the knowledge of TCM, to accelerate the development and implementation of TCM clinical guidelines and to apply appropriate techniques properly are both the need of TCM and hospice developments.

Attitude

Their mean of totalling score of attitude were 92.22 for all the 24 items. Across the five cities, hospice care providers in City-C scores as high as 96.99. The four sub-concepts also indicated positive attitudes towards providing hospice care. This study showed that respondents agree about the most threats of providing hospice care were "I feel guilty when a patient of mine dies" (51.0%), and "advanced cancer patient is hopeless for cure" (44.3%), which is similar to Liu's study^[28]. In general, providers in this study have a high agreement with the benefits of hospice care. It showed that the proportion of respondents who agreed with the benefits of improving quality of life is over 80%. Which means that they generally agree with the role of providing hospice care in improving quality of life. More than 80% of respondents also agreed that hospice care is helpful for patients and families on preparing to death, as "respect for patient's religion and burial rites", "better communication with advanced patients", and "help medical staff to take care of patients better". However, the agreements were relatively lower on "help to die at home" and "avoid the idea of euthanasia" those proportion were around 55%. It may be related to the lower service rate of hospice care at home than hospice care at institution in China. Most respondents agreed on the social value of hospice care, they thought "it is meaningful" (85.82%), "it is a part of duty" (74.39%), and 62.60% of them reflected that they chose hospice care because they got "the approval and support of department leader, colleagues, relatives and friends". It can be considered that the choice of hospice care providers in medical institutions in China to engage in hospice care service work was based on the role norm of "organization actor". Their behavioural choice was often from the perspective of the organization. They thought hospice care service as a business behaviour, and their performance was subject to the arrangement of the organization leader. Therefore, the attention and corresponding policy measures of governments are crucial. In addition, more than half of the respondents (58.63%) experienced the death of family member, which affected them to provide hospice care. It proved that the understanding of life and death, and hospice service delivery could be deepened or changed by witness or observation of the experience of important people around, which embodies the connotation of "neighbourhood effect"^[29].

Practices

The confidence of providing hospice care and their self-report practices on hospice care were to scale a caregivers' behaviour. The mean of totalling scores were 41.56 and 38.61 in their self-evaluated confidence and practice.

The confidence of providing "pain assessment of patients" and "alleviate pain and discomfort of dying patients" was 74.48% and 68.00%, respectively, while confidence to "guide the management of afterwards and funeral preparation for families" was the lowest (62.21%).

General practitioners and other health care providers in CHCs or THCs considered non-physical abilities (spiritual, cultural, ethical, and legal, etc.) almost as important as pain and symptom control, but most of them lack confidence in their non-physical abilities^[30]. Furthermore, the overall average age of the respondents was 35.65 years old, and their personal experience was relatively inexperienced. If they did not receive systematic training, it would be difficult to improve their confidence of providing such guidance services. The confidence to “coordinate the media resources of medical, social, psychological and spiritual care?” was also relatively low, reflecting that they still need to improve in mobilizing the health care system and social forces to provide coordinated care. The self-report practice is strongly related to knowledge, attitude and confidence ($P < 0.001$). This current study didn't analyse how the confidence and self-report practice influence each other ($r = 0.631$), which need to be further confirmed. Respondents were more confident to coordinate the media resources of medical, social, psychological and spiritual care (3.70) however they did practice so enough (3.42). And they practice less in guiding the body cuisine and funeral preparation for families (3.16) with also a relatively low confident to do (3.62). Currently 41.46% of all respondents already had experience in providing hospice care, and the general mean score of self-report practice is 3.51(38.61/11) which means the frequency was between “occasionally” and “often”. It indicated that for professional full-time hospice care providers, they should increase their practices frequency.

Strengths and Limitation

This study adopted a scientific and localized developed scale to survey the general actuality of hospice care providers' knowledge, attitudes and practices of hospice care in five cities, from west to east in China. Relevant influencing factors explored through multiple-factor analysis for probably suggestions to improve. The investigation was conducted under the background of the national hospice care pilot work to explore the deep causes of the low death quality in China from the perspective of medical service providers. It provided a baseline for promoting the provision and utilization of hospice care services in China, it could also be evidence on exploring the characteristics of localization at primary health service institutions for improving the quality of hospice care services, and improving the quality of life of patients in their “last mile of life”.

It still has some selection bias, as we conduct a stratified random sampling. In actual operation, we investigated all of staff in those institutions which had total staff less than 50 and, if some CHCs or THCs were newly approved pilot institutions of hospice care in 2019, they also can be voluntary to take part in the survey. Secondly, in this survey, some respondents were not primarily responsible for hospice care work, and may not do it in the future according to for institutional arrangements and personal willingness. In addition, we only sampled 5 cities on behalf of 5 areas of China maybe not so strong evidence. If conditions permit, sampling should be expanded in further study. To scale a hospice care provider's behaviour, we designed the confidence of providing hospice care and self-report practice however it is still not so ideal way to evaluate a person's true behaviour. To explain better the potential meaning of data, a mix method research may be a solution.

Conclusion

Hospice care, as an integral part of human's life cycle health management, has increasingly become an important livelihood issue of common concern. The development of hospice care in China is still in its infancy, and the long march has just begun. There are still many practical problems to be solved.

The investigation of hospice caregivers' knowledge, attitudes and practices reflected the urgent need for systematic training of professional knowledge and skills in primary medical institutions. And for future formulation of training programs, the study-results of both suppliers and buyers should both be considered. The quality and quantity of hospice service should be both attached importance to and promoting it. In addition, we should pay more attention to the equity issues on balanced development of different areas, draw on the valuable experience of the eastern area in the development of hospice care, and put the work into practice.

List Of Abbreviations

Full name	Abbreviation
knowledge, attitudes, and practices of hospice care	KAPHC
General Practitioner	GP
community health center	CHC
township health center	THC
Traditional Chinese Medicine	TCM

Declarations

Ethics approval and consent to participate

The design of the study and participants' selection performed in accordance with the Declaration of Helsinki and were approved by the ethical review committee of Ninth People's Hospital Affiliated to Medical School of Shanghai Jiaotong University (No.SH9H-2021-T11-1). It did not involving any human material, or human data. The respondents were told in advance about the anonymous investigation and informed consent was obtained.

Consent for publication

Not applicable.

Availability of data and materials

All data generated or analysed during this study are included in this published article.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

ZS made substantial contributions to data collection, analysis and interpretation and drafted the manuscript. LJ made contributions to research design and survey, and also contributed to draw a conclusion for the revised manuscript. All authors reviewed and approved the final manuscript.

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