Ge et al. BMC Emergency Medicine (2024) 24:144
https://doi.org/10.1186/s12873-024-01065-z

BMC Emergency Medicine

RESEARCH Open Access

Validation of a checklist to facilitate serious illness conversations in adult emergency in China: a single-centre pilot study

Hongxia Ge[1], Shu Li[1*] and Qingbian Ma[1]

Abstract

Background Advances in emergency and critical care have improved outcomes, but gaps in communication and decision-making persist, especially in the emergency department (ED), prompting the development of a checklist to aid in serious illness conversations (SIC) in China.

Methods This was a single-centre prospective interventional study on the quality improvement of SIC for life-sustaining treatment (LST). The study recruited patients consecutively for both its observational baseline and interventional stages until its conclusion. Eligible participants were adults over 18 years old admitted to the Emergency Intensive Care Unit (EICU) of a tertiary teaching hospital, possessing full decisional capacity or having a legal proxy. Exclusions were made for pregnant women, patients deceased upon arrival, those who refused participation, and individuals with incomplete data for analysis. First, a two-round Delphi process was organized to identify major elements and generate a standard process through a checklist. Subsequently, the efficacy of SIC in adult patients admitted to the EICU was compared using the Decisional Conflict Scale (DCS) score before (baseline group) and after (intervention group) implementing the checklist.

Results The study participants presented with the most common comorbidities, such as diabetes, myocardial infarction, cerebrovascular disease, moderate-to-severe renal disease, congestive heart failure, and chronic pulmonary disease. The median Charlson Index did not differ between the baseline and intervention cohorts. The median length of hospital stay was 11.0 days, and 82.9% of patients survived until hospital discharge. The total DCS score was lower in the intervention group than in the baseline group. Three subscales, including the informed, values clarity, and support subscales, demonstrated significant differences between the intervention and baseline groups. Fewer intervention group patients agreed with and changed their minds about cardiopulmonary resuscitation (CPR) compared to the baseline group.

Conclusion The use of a SIC checklist in the EICU reduced the DCS score by increasing medical information disclosure, patient value awareness, and decision-making support.

Keywords Emergency medicine, Serious illness conversations, Decisional Conflict Scale, Checklist

*Correspondence:
Shu Li
lishu_lishu@bjmu.edu.cn
[1]Department of Emergency Medicine, Peking University Third Hospital, No. 49 North Garden Road, Haidian District 100191, Beijing, People's Republic of China

Background

As the population ages and emergency department (ED) visits continue to increase, the number of adults with serious and complex illnesses who present to the ED simultaneously increases [1]. The deployment of LST strategies has significantly reduced the morbidity and mortality associated with critical illness and multi-organ system failure. A critical gap remains between medical professionals and patients and their families in understanding the status and prognosis of diseases and their attitude toward related treatment [2]. Management often defaults to the most aggressive choices. Inappropriate models applied during family meetings and conversations may lead to misunderstandings, conflicts, unwanted interventions, and unexpected lawsuits [2].

Doctors should provide medical information along with guidance and support, where appropriate, during SIC. However, events occurring in the ED are unpredictable, making it a particularly difficult setting with many communication challenges, such as the need for multiple interactions between different professionals, frequent interruptions, limited time, lack of a pre-existing doctor-patient relationship, and long waiting times [3]. These challenges impede physicians' ability to provide an objective prognosis of illness, identify patient values, clarify key elements of management strategy, and establish appropriate goals for patients with critical illness. Infrequent conflicts have arisen owing to the different ethical values of patients, the treatment team, or patients' relatives. The limited exposure of medical professionals makes communication inadequate [4].

Communication in the ED is important for providing quality care, improving treatment outcomes and patient safety, and increasing adherence to prescribed therapy [3]. Conclusions of studies on communication interventions for serious illnesses remain controversial [5] with no widely applied protocol or checklist for the ED [6]. Moreover, there are significant cultural differences between Asian and Western countries that may introduce obstacles during the direct implementation of Western protocols. Despite palliative care specialists' importance, ED clinicians must initiate difficult discussions and ensure goal-aligned care during crises. A checklist using a multidisciplinary approach as a tool to guide doctor-patient communication about LST during SIC in the ED was previously developed to address cultural differences and avoid the vagueness of operational processes [7]. This study evaluates the checklist's impact on SIC and LST in China.

Methods

Study design and setting

This was a single-centre prospective interventional study on the quality improvement of SIC for LST. First, literature was reviewed [6, 8], and a two-round Delphi process was organized to identify the major elements and generate a standard process through a checklist [7]. The checklist consists of four domains with 22 items, including communication skills, disclosure of medical information, patient autonomy and decisional assistance, and summary and process improvements (Supplementary file 1). The efficacy of SIC in adult patients admitted to EICU was compared using the Decisional Conflict Scale (DCS) score [9] before (baseline group) and after (intervention group) implementing the checklist.

Study setting and patients were recruited consecutively for both the observational baseline and interventional stages until the end of the study. Inclusion criteria for patients were: (1) age > 18 years, (2) admission to the EICU of a tertiary teaching hospital, and (3) full decisional capacity or legal proxy. The exclusion criteria were: (1) pregnant women, (2) death upon arrival, (3) refusal to participate, and (4) incomplete data for analysis.

Outcome measurement

The primary outcome was the DCS score of patients or proxies on their medical decisions through a questionnaire (Supplementary file 1). Decisional conflict scale was found to evaluate health-care consumers' uncertainty in making a health-related decision and the factors contributing to the uncertainty. There are 16 item and 5 response categories in tradition DCS including informed subscale, values clarity subscale, support subscale, uncertainty subscale and effective decision subscale to reflect uncertainty, selected factors contributing to the uncertainty and the perceptions of effective decision making [9]. Subjects are asked to reflect on the decisions they have just made to respond to the statements using a five-point Likert scale. Total score of DCS and scores of all five subscales are collected for further analysis. Higher scores indicate higher decisional conflict. Secondary outcomes included patient and family involvement, conversation outcomes, and final decisions.

Data collection and tools

SIC-related information such as goal of treatment, impact factors for decision, patient value, decision on intubation, and cardiopulmonary resuscitation (CPR) were collected.

Clinical information such as demographics, medical history, diagnosis, clinical characteristics, invasive treatments, length of hospital stay, and clinical outcomes were collected from the electronic medical record (EMR).

Ethical approval

There was no medical intervention for patients with minimal risks. Written informed consent before collecting EMR data from the patients or proxies was obtained. The patients' source data was kept confidential, and the

information in the database for the study was de-identified. The study was ethically approved by the Institutional Review Board (IRB-2021-591).

Statistical analysis

Estimating the effect size of this study was difficult owing to the different medical issues, contexts, and patient populations. The expected sample size was set to at least 100 for both the baseline and post-intervention groups after a comprehensive discussion with a clinical epidemiologist (ZH).

Descriptive analyses of the study characteristics were performed. Comparisons between the groups were performed using non-parametric methods. Continuous and categorical variables were analysed using the Mann–Whitney U test and the Chi-square or Fisher's exact test, respectively. The demographic characteristics of all the participants were collected using a questionnaire. Data were collected using the online questionnaire tool, WJX (https://www.wjx.cn/vj/YCJ1pwU.aspx). Patient information was collected and managed using research electronic data capture tools hosted at the institution. Source data were exported as SPSS files for further analysis. A two-tailed p-value <0.05 was considered statistically significant. Data were analysed using IBM SPSS Statistics for Windows, version 22.0 (SPSS Science Inc., Chicago, US).

Results

A total of 351 adult patients were admitted to the EICU. Among them, 179 patients were consecutively recruited from March 2022 to June 2022 for the observational baseline stage, and a second cohort of 172 patients for the interventional stage was recruited from July 2022 to November 2022. The data of 325 patients were included in the final analysis (Fig. 1).

Patient demographic and clinical characteristics

A total of 325 individuals were enrolled in this study, with a median age of 77 (interquartile range [IQR]: 65.0, 85.5) years, and 56.6% of them were men. The most common comorbidities were diabetes (38.2%: 26.2% without and 12% with end-organ damage), myocardial infarction (24.6%), cerebrovascular disease (21.5%), moderate or severe renal disease (17.8%), congestive heart failure (17.5%), and chronic pulmonary disease (15.1%). The median Charlson Index did not differ between the baseline and intervention cohorts (4 [IQR: 2, 6] vs. 4 [IQR: 3, 6]; $p=0.469$). There were fewer patients with pulmonary

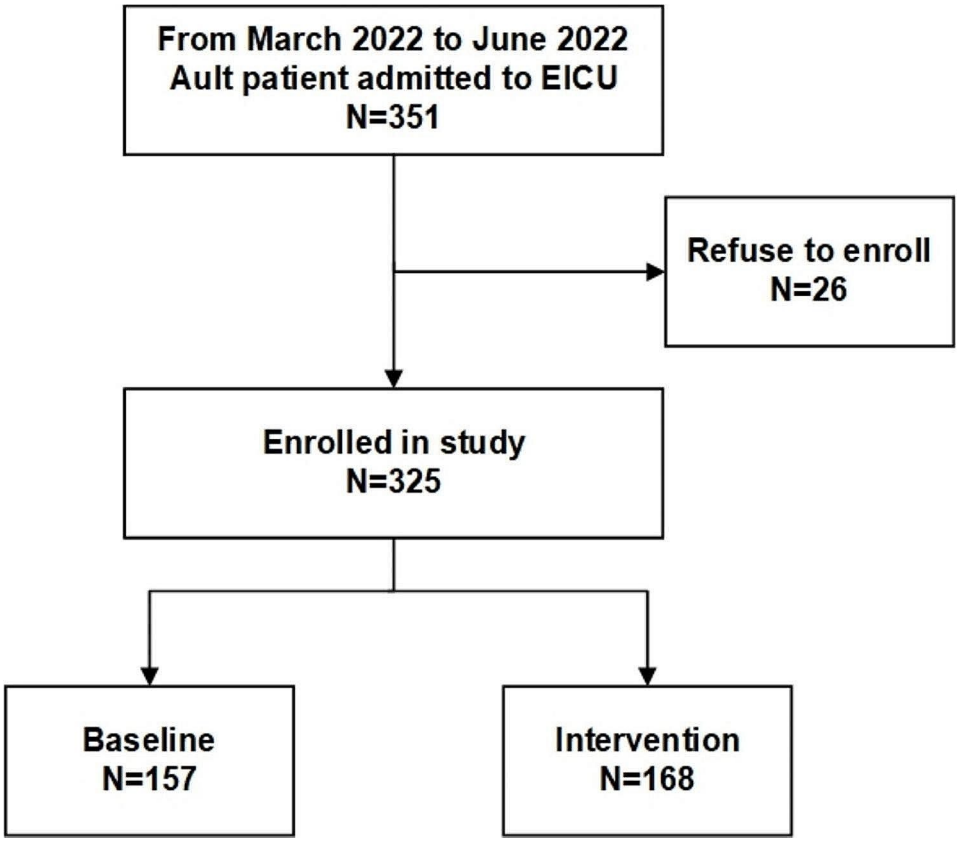

Fig. 1 Diagram of patients recruited for serious illness conversations (SIC) and the number of records analysed in the two groups

disease and endocrinologic disease in the intervention group than in the baseline group (Table 1).

A total of 143 (44%) patients were admitted mainly because of cardiovascular diseases, and 106 (32.6%) of them had pulmonary disease. Acute Physiology And Chronic Health Evaluation (APACHE) II scores of the intervention group were higher than those of the baseline group (17.0 [IQR: 11.0, 22.0] vs. 14.0 [IQR: 10.0, 20.0]; $p=0.008$). Non-invasive ventilation, endotracheal intubation, and renal replacement therapy were performed in 96 (29.5%), 71 (21.8%), and 59 (18.2%) patients, respectively. Furthermore, 58 (17.8%) required vasopressors owing to circulatory decompensation, and 12 (3.7%) underwent CPR. The median length of hospital stay was 11.0 (IQR: 6.0, 17.5) days and 270 (83.1%) patients survived upon hospital discharge (Table 1).

Proxy demographic

A total of 159 (48.9%) proxies were male, and their median age was 49.0 (IQR: 40.0, 57.0) years. The educational and occupational categories of the proxies were similar between groups (Table 2). A total of 290 proxies (89.2%) rated the questionnaire as moderate to very easy.

Comparison of DCS between the baseline and intervention groups

The total DCS score was 31.7 (IQR: 25.0, 40.6). Additionally, all of the five subscales, including the informed, value clarity, support, uncertainty, and effective decision ones, exceeded 25 points, which demonstrated high decisional conflict among proxies (Table 3).

The total DCS score was lower in the intervention group than in the baseline group (31.3 [IQR: 25.0, 37.5] vs. 33.3 [IQR: 25.0, 41.7]; $p=0.016$). Three subscales, the informed, values clarity, and support subscales, demonstrated significant differences between the intervention and baseline groups (Table 3).

Comparison of shared decision-making process between the baseline and intervention groups

A total of 158 (48.6%) patients or their proxies stated cure as their primary goal of care, whereas 143 (44%) desired relief of symptoms. The most frequently mentioned factors considered during the decision-making process were patient age (72%), quality of life (41.9%), disease prognosis (39.2%), injury caused by LST (31.4%), and patient value (26.7%). Treatment costs (4.7%) were considered the least. A total of 158 (57.5%) proxies thought that the patients had partial or full decision-making capacity,

Table 1 Demographic and clinical characteristics of patients

	Toal (*N*=325)	Baseline (*N*=157)	Intervention (*N*=168)	*p*
Demographics				
Gender, male (*n*, %)	184(56.6)	86(54.8)	98(58.3)	0.518
Age, median (IQR)	77(65.0,85.5)	78(67.0,85.0)	76(65.0,86.8)	0.997
Charlson index, median (IQR)	4(3,6)	4(2,6)	4(3,6)	0.469
Diagnosis				
Cardiovascular diseases (*n*, %)	143(44.0)	73(46.5)	70(41.7)	0.381
Pulmonary disease (*n*, %)	106(32.6)	67(42.7)	39(32.2)	<0.001*
Digestive disease (*n*, %)	57(17.5)	28(17.8)	29(17.3)	0.892
Renal disease (*n*, %)	51(15.7)	27(17.2)	24(14.3)	0.471
Drug overdose (*n*, %)	24(7.4)	12(7.6)	12(7.1)	0.863
Endocrinologic disease (*n*, %)	23(7.1)	17(10.8)	6(3.6)	0.011*
APACHE II score, median (IQR)	16.0 (10.0,21.0)	14.0 (10.0,20.0)	17.0 (11.0,22.0)	0.008*
Intubation (*n*, %)	71(21.8)	41(26.1)	30(17.9)	0.072
RRT (*n*, %)	59(18.2)	26(16.6)	33(19.6)	0.471
Vasopressor (*n*, %)	58(17.8)	28(17.8)	30(17.9)	0.996
CPR(*n*, %)	12(3.7)	9(5.7)	3(1.8)	0.059
Defibrillation (*n*, %)	2(0.6)	1(0.6)	1(0.6)	0.962
Outcome				
Length of hospital stays, median (IQR)	11.0 (6.0,17.5)	10.0 (6.0,16.0)	11.0 (7.0,18.8)	0.356
Survival discharge (*n*, %)	184(56.6)	89(56.7)	95(56.5)	0.486
Transfer to other facility (*n*, %)	86(26.5)	38(24.2)	48(28.6)	
Non-survival (*n*, %)	55(16.9)	30(19.1)	25(14.9)	

APACHE II score: Acute Physiology and Chronic Health Condition score; RRT: renal replacement therapy; CPR: cardiopulmonary resuscitation. * $p<0.05$

Table 2 Characteristics of the proxies

	Toal (*N* = 325)	Baseline (*N* = 157)	Intervention (*N* = 168)	*p*
Demographics				
Gender, male (*n*, %)	159(48.9)	72(45.9)	87(51.8)	0.286
Age, median (IQR)	49.0 (40.0, 57.0)	49.0 (40.0,57.8)	49.0 (42.0,57.0)	0.880
Education (*n*, %)				0.732
Junior high school	32(9.8)	14(8.9)	18(10.7)	
High school	71(21.8)	32(20.4)	39(23.2)	
University	180(55.4)	92(58.6)	88(52.4)	
Master or doctor's degree	42(12.9)	19(21.1)	23(13.7)	
Occupation (*n*, %)				0.192
Experts, technicians, and related workers	87(26.8)	40(25.5)	47(28.0)	
Government officials and business operations of enterprises and institutions	33(10.2)	20(12.7)	13(7.7)	
Affairs workers and related workers	31(9.5)	12(7.6)	19(11.3)	
Business and service industry workers	69(21.2)	38(24.2)	31(18.5)	
Agriculture, animal husbandry, forestry workers and fishermen, hunters	5(1.5)	1(0.6)	4(2.4)	
Production and related workers, transportation equipment operators and laborers	18(5.5)	9(5.7)	9(5.4)	
others	82(25.2)	37(23.6)	45(26.8)	
Income[#] (*n*, %)				0.553
< 5000	85(26.2)	44(28.0)	41(24.4)	
5000 ~ 10,000	118(36.3)	56(35.7)	62(36.9)	
10,000 ~ 15,000	60(18.5)	27(17.2)	33(19.6)	
15,000 ~ 20,000	31(9.5)	18(11.5)	13(7.7)	
> 20,000	31(9.5)	12(7.6)	19(11.3)	

[#]: RMB per month

Table 3 Decisional conflict scale of patient proxies

Subscales	Toal (*N* = 325)	Baseline (*N* = 157)	Intervention (*N* = 168)	*p*
Informed, median (IQR)	25.0(16.7,33.3)	25.0(25.0,37.5)	25.0(16.7,25.0)	0.034*
Values clarity, median (IQR)	33.3(25.0,41.7)	33.3(25.0,41.7)	33.3(25.0,41.7)	0.023*
Support, median (IQR)	41.7(25.0,50.0)	41.7(33.3,50.0)	37.5(25.0,50.0)	0.002*
Uncertainty, median (IQR)	41.7(25.0,50.0)	41.7(25.0,58.3)	37.5(25.0,50.0)	0.196
Effective decision, median (IQR)	25.0(25.0,31.3)	25.0(25.0,31.3)	25.0(20.3,31.3)	0.293
Total, median (IQR)	31.7(25.0,40.6)	33.3(25.0,41.7)	31.3(25.0,37.5)	0.016*

* $p < 0.05$

whereas only 93 (28.6%) expressed their preference for LST (Table 4).

A total of 167 (51.5%) patients or proxies wanted every treatment that could save or prolong their lives. Furthermore, 206 (63.6%) patients or proxies agreed to adopt endotracheal intubation when applicable, whereas 183 (56.5%) agreed to undergo CPR during cardiac arrest. Fewer patients in the intervention group agreed to CPR (86 (51.2%) vs. 97 (62.2%); $p = 0.046$), and some changed their minds about the decision regarding CPR during their hospital stay (5 [3.0%] vs. 13 [8.3%]; $p = 0.037$) compared to those in the baseline group (Table 4).

Discussion

Doctor-patient communication is crucial for quality medical care. Few studies have explored SIC quality and decisional conflicts in the ED. This study provides quantitative evidence of conversation efficacy in the ED and is the first to apply the DCS in such a setting in mainland China, demonstrating SIC enhancement via standardized processes. In EICU admissions, employing an ED checklist in this pilot study reduced DCS and improved informed, value, and support subscales without adverse events.

Critically ill senior patients admitted to the EICU with a considerable proportion of vague survival rate

In a retrospective analysis of critically ill senior patients, factors such as age, sex, malignancy, use of mechanical

Table 4 Shared decision-making process during serious illness conversations in LST

Decision-making process	Total (*N* = 325)	Baseline (*N* = 157)	Intervention (*N* = 168)	*p*
Goal of care (n, %)				0.835
cure	158(48.6)	79(50.3)	79(47.0)	
relieve symptoms	143(44.0)	67(42.7)	76(45.2)	
palliative care	24(7.4)	11(7.0)	13(7.7)	
Impact factors for decision on LST (n, %)				
Patient age	213(72.0)	91(71.1)	122(72.6)	0.772
Life quality	124(41.9)	58(45.3)	66(39.3)	0.298
Prognosis by medical team	116(39.2)	48(37.5)	68(40.5)	0.603
Injury caused by intubation/CPR	93(31.4)	50(39.1)	43(25.6)	0.013*
Patient value	79(26.7)	37(28.9)	42(25.0)	0.452
Treatment expenditure	14(4.7)	7(5.5)	7(4.2)	0.601
Patient decisional capacity confirmed per proxy (n, %)	158(57.5)	60(56.0)	98(58.3)	0.543
Patient value expressed (n, %)	93(28.6)	47(29.9)	46(27.4)	0.611
Decision on LST (n, %)				
Consent on intubation	206(63.6)	106(67.9)	100(59.5)	0.115
Consent on CPR	183(56.5)	97(62.2)	86(51.2)	0.046*
Final decision documented (n, %)				
Decision reversal on intubation	8(2.5)	6(3.8)	2(1.2)	0.126
Decision reversal on CPR	18(5.5)	13(8.3)	5(3.0)	0.037*

* $p < 0.05$

ventilation, use of vasoactive agents, and creatinine level were considered independent risk factors for in-hospital mortality [10]. The median age of all patients enrolled in the present study was 77 years, and 56.6% of them were men, which was greater than the previously reported median age of patients admitted to the ICU (58–71 years, with 52–71% of them male) [10–14]. The median Charlson Index was 4, which was higher than that in previously reported patients admitted to the ICU [11]. The APACHE II score was developed more than 20 years ago and Tian et al. reported the day-3 APACHE II score as an optimal biomarker to predict the outcomes of patients admitted to the ICU and observed that a score of 17 is the best cut-off value for defining patients at a high risk of mortality [14]. The median APACHE II score of the present patient cohort was 16, which is similar to or slightly higher than that for patients admitted to the ICU, which was reported to be 12–16 [11, 13].

Implementing the ED checklist for LST in SIC is applicable

Despite the large number of doctor-patient communication scales or tools validated over the last 40 years and reviews of the literature on this topic, no generic scale functional for common acute conditions exists [15], particularly in China. Using a prospective two-round Delphi consensus-seeking survey among multiple stakeholders in six tertiary teaching hospitals across China, significant domains and items during shared decision-making and informed consent regarding LST in SIC in emergency were obtained [7].

Decisional conflict declines post-intervention by application of the checklist

The DCS measures personal perceptions of uncertainty in choosing options, factors contributing to uncertainty and effective decision-making [16]. The original questionnaire was translated and tested in Mandarin the previous year and showed optimal reliability and validity [17]. In the present study, the total DCS score was lower in the intervention group than in the baseline group after implementing the checklist. Several factors have been hypothesized to contribute to patient or proxy decisional conflicts; they include a lack of information about alternatives and their consequences, unclear values, skill deficits in implementing decisions, and emotional stress.

The optimal period for determining disease prognosis remains unclear [18]. However, ED visits often signify an inflection point in illnesses, with a rapid decline [19]. Poor prognosis was discussed and documented in the majority of cases [20]. The overall 1-year mortality rate of patients admitted to the ICU was reported to be 26.4–40.0% [21], whereas over 50% of the proxies in the present study wanted every available treatment. Each SIC depends on the patient or family and achieving the best possible understanding of the relevant illness, available treatment options, and prognoses is paramount [22]. Lee et al. performed a retrospective observational study focusing on goals of care conversation in ED patients and discovered that the number of full codes decreased after the intervention [23]. An increase in decision reversal on CPR during the hospital stay was observed in the baseline group, implying that proxies' decisions did not change

in the intervention group. The application of checklists emphasizes the clarification of medical facts and the disclosure of prognostic information, particularly for trauma caused by LST, which may explain the improvement in decision-making conflict scores in this study.

Many ED patients lose decision-making capacity due to chronic diseases. Traditional LST offered by emergency providers may not be concordant with patients' goals or even address the needs for which they sought emergency care [1]. In accordance with the fact that the rate of advanced directives is low, and patients' preference is often neglected, the medical decision is usually more dependent on age and quality of life evaluated by proxies but less on patients' value in the present study. Scheunemann et al. reported that in less than 12% of family conferences, participants addressed values of high importance to most patients [24]. Lovadini et al. assessed the agreement between medical orders for LST and advanced care planning conversations and discovered disagreement in 11% of cases [25]. Zhu et al. reported poor consistency in preferences for mechanical ventilation between patients and family caregivers [26]. Interventions are needed to ensure that patients' values and preferences are revealed and integrated into LST decisions in ICUs. It is possible that formal introductions and training may have fostered behavioural changes that led to more discussions on LST.

Patients often suffer from medical information gaps, mental distress, financial strain, and difficulty accessing required care [27]. Several studies have reported on the provision of family support, such as emotional, psychosocial, and caregiver support in the ED [28]. Furthermore, SIC training for health professionals is inadequate. Guo et al. conducted a survey on doctors' communication skills in China and observed that these skills do not match patients' needs [29]. Degabriel et al. established that age, setting, and method of conveyance of patients to the hospital can influence patients' perception of medical communication in the ED and, thus, their satisfaction and experience in the ED [3]. Other factors include proficiency in interpersonal goal-oriented communication, reflective capacity, active listening, and collaboration with the patient [30]. In the clinical encounter, the checklist synthesizing viewpoints from different stakeholders in the field of medical communication was described as sensitive and adaptable to the patient. EM physicians may need more preparation for goal-of-care interactions with critically ill patients and their families in time-constrained conditions.

Limitation

Our SIC pilot had limitations. First, patient variations could impact the significance of pre- and post-intervention changes, as EICU patient composition fluctuates yearly. Furthermore, complicity and disease severity affect SIC content, process, and decisional conflict likelihood, though statistical comparisons confirmed cohort similarity. Second, the clinical experience and performance of residents may also vary, considering their different enrolment periods into the residency program and ED rotations. Resident compliance may differ among different resident cohorts. However, such an influence existed throughout the study, and a final comparison was made based on the same impact. Directors of EICU maintain consistency in the training process, ensure quality education, facilitate family meetings, and supervise residents. Third, the presence of an observer may also produce external stress, which is commonly observed in similar studies and is difficult to eliminate. Nonetheless, it changes the behaviour of both residents and patients to a certain extent. Fourth, this pilot study was conducted at a single site; therefore, the results may not be generalizable to other EDs.

Conclusions

In summary, an SIC checklist in the EICU lowered decisional conflict by enhancing information disclosure, patient value recognition, and decision support. Overcoming SIC barriers through routine SIC checklist integration can improve its effectiveness, adoption, and dissemination.

Abbreviations

APACHE	Acute Physiology And Chronic Health Evaluation
CPR	Cardiopulmonary resuscitation
DCS	Decisional Conflict Scale
ED	Emergency department
EICU	Emergency Intensive Care Unit
EMR	Electronic medical record
LST	Life-sustaining treatment
IQR	Interquartile range
RRT	Renal replacement therapy
SIC	Serious illness conversations

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12873-024-01065-z.

Supplementary Material 1

Supplementary Material 2

Acknowledgements

The authors would like to acknowledge the assistance of Hua Zhang for his expertise on epidemiology. Shuo Li oversees EICU who can facilitate the family meeting and supervise residents.

Author contributions

LS conceived and designed the study and obtained research funding. MQ and GH supervised the conduct of the study and data collection. LS undertook the recruitment of patients and managed the data, including quality control. GH drafted the manuscript, and all authors contributed substantially to its revision. LS takes responsibility for the paper as a whole.

Funding
This study was supported by the China Medical Board-Open Competition Program (20–378) and Peking University Third Hospital Fund for Returned Scholars (BYSYLXHG2020004).

Data availability
The datasets generated and analysed during the current study are not publicly available but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
The study was ethically approved by the Institutional Review Board of Peking University Third Hospital (IRB-2021-591).

Consent for publication
Not applicable.

Competing interests
There are no conflicts of interest of the authors.

Received: 29 February 2024 / Accepted: 31 July 2024
Published online: 07 August 2024

References

1. Grudzen CR, Richardson LD, Morrison M, Cho E, Sean Morrison R. Palliative care needs of seriously ill, older adults presenting to the emergency department. Acad Emerg Med. 2010;17:1253–7.
2. Hanning J, Walker KJ, Horrigan D, Levinson M, Mills A. Review article: goals-of-care discussions for adult patients nearing end of life in emergency departments: a systematic review. Emerg Med Australas. 2019;31:525–32.
3. Degabriel D, Petrino R, Frau ED, Uccella L. Factors influencing patients' experience of communication with the medical team of the emergency department. Intern Emerg Med. 2023;18:2045–51.
4. Baugh AD, Vanderbilt AA, Baugh RF. Communication training is inadequate: the role of deception, non-verbal communication, and cultural proficiency. Med Educ Online. 2020;25:1820228. https://doi.org/10.1080/10872981.2020.1820228.
5. Ryan RE, Connolly M, Bradford NK, Henderson S, Herbert A, Schonfeld L, et al. Interventions for interpersonal communication about end of life care between health practitioners and affected people. Cochrane Database Syst Rev. 2022;7:CD013116. https://doi.org/10.1002/14651858.cd013116.pub2.
6. Bernacki RE, Block SD, American College of Physicians High Value Care Task Force. Communication about serious illness care goals: a review and synthesis of best practices: a review and synthesis of best practices. JAMA Intern Med. 2014;174:1994–2003.
7. Li S, Xie J, Chen Z, Yan J, Zhao Y, Cong Y, et al. Key elements and checklist of shared decision-making conversation on life-sustaining treatment in emergency: a multispecialty study from China. World J Emerg Med. 2023;14:380–5.
8. Ouchi K, George N, Schuur JD, Aaronson EL, Lindvall C, Bernstein E, et al. Goals-of-care conversations for older adults with serious illness in the emergency department: challenges and opportunities. Ann Emerg Med. 2019;74:276–84.
9. O'Connor AM. Validation of a decisional conflict scale. Med Decis Mak. 1995;15:25–30.
10. Lu Y, Ren C, Wu C. In-hospital mortality prediction model for critically ill older adult patients transferred from the emergency department to the Intensive Care unit. Risk Manag Healthc Policy. 2023;16:2555–63.
11. Christensen S, Johansen MB, Christiansen CF, Jensen R, Lemeshow S. Comparison of Charlson comorbidity index with SAPS and APACHE scores for prediction of mortality following intensive care. Clin Epidemiol. 2011;3:203–11.
12. Minne L, Abu-Hanna A, de Jonge E. Evaluation of SOFA-based models for predicting mortality in the ICU: a systematic review. Crit Care. 2008;12:R161.
13. Falcão ALE, Barros AG, de Bezerra A, Ferreira AAM, Logato NL, Silva CM. The prognostic accuracy evaluation of SAPS 3, SOFA and APACHE II scores for mortality prediction in the surgical ICU: an external validation study and decision-making analysis. Ann Intensive Care. 2019;9:18.
14. Tian Y, Yao Y, Zhou J, Diao X, Chen H, Cai K, et al. Dynamic APACHE II score to predict the outcome of Intensive Care unit patients. Front Med (Lausanne). 2021;8:744907.
15. Sustersic M, Gauchet A, Kernou A, Gibert C, Foote A, Vermorel C, et al. A scale assessing doctor-patient communication in a context of acute conditions based on a systematic review. PLoS ONE. 2018;13:e0192306.
16. Garvelink MM, Boland L, Klein K, Nguyen DV, Menear M, Bekker HL, et al. Decisional Conflict Scale use over 20 years: the anniversary review. Med Decis Mak. 2019;39:301–14.
17. Lu C, Mu W, Jin Y-H, Shi Y-X, Li G, Li Y, et al. Cross-cultural adaptation and psychometric assessment of the statement format Decisional Conflict Scale for Mandarin version. BMC Health Serv Res. 2019;19:873.
18. Gacioch B, Neugarten C, Searls DE, DeSandre P. Emergency palliative care: severe acute neurological injury with poor prognosis. J Palliat Med Published Online First. 2023. https://doi.org/10.1089/jpm.2023.0191.
19. Haimovich AD, Xu W, Wei A, Schonberg MA, Hwang U, Taylor RA. Automatable end-of-life screening for older adults in the emergency department using electronic health records. J Am Geriatr Soc. 2023;71:1829–39.
20. Bowman JK, Aaronson EL, Petrillo LA, Jacobsen JC. Goals of care conversations documented by an embedded emergency department-palliative care team during COVID. J Palliat Med. 2023;26:662–6.
21. Moman RN, Loprinzi Brauer CE, Kelsey KM, Havyer RD, Lohse CM, Bellolio MF. PREDICTing mortality in the emergency department: external validation and derivation of a clinical prediction tool. Acad Emerg Med. 2017;24:822–31.
22. Horowitz RK, Hogan LA, Carroll T. MVP-medical situation, values, and plan: a memorable and useful model for all serious illness conversations. J Pain Symptom Manage. 2020;60:1059–65.
23. Lee J, Abrukin L, Flores S, Gavin N, Romney M-L, Blinderman CD, et al. Early intervention of palliative care in the emergency department during the COVID-19 pandemic. JAMA Intern Med. 2020;180:1252–4.
24. Scheunemann LP, Cunningham TV, Arnold RM, Buddadhumaruk P, White DB. How clinicians discuss critically ill patients' preferences and values with surrogates: an empirical analysis: an empirical analysis. Crit Care Med. 2015;43:757–64.
25. Lovadini GB, Fukushima FB, Schoueri JFL, Reis RD, Fonseca CGF, Rodriguez JJC, et al. To what extent do physician orders for life-sustaining treatment (POLST) reflect patients' preferences for care at the end of life? J Am Med Dir Assoc. 2021;22:334–e3392.
26. Zhu T, Liu D, van der Heide A, Korfage IJ, Rietjens JAC. Preferences and attitudes towards life-sustaining treatments of older Chinese patients and their family caregivers. Clin Interv Aging. 2023;18:467–75.
27. Bell D, Ruttenberg MB, Chai E. Care of geriatric patients with advanced illnesses and end-of-life needs in the emergency department. Clin Geriatr Med. 2018;34:453–67.
28. Schaden E, Herczeg P, Hacker S, Schopper A, Krenn CG. The role of advance directives in end-of-life decisions in Austria: survey of intensive care physicians. BMC Med Ethics. 2010;11:19.
29. Guo A, Wang P. The current state of doctors' communication skills in mainland China from the perspective of doctors' self-evaluation and patients' evaluation: a cross-sectional study. Patient Educ Couns. 2021;104:1674–80.
30. Verheijden M, Giroldi E, van den Eertwegh V, Luijkx M, van der Weijden T, de Bruin A, et al. Identifying characteristics of a skilled communicator in the clinical encounter. Med Educ. 2023;57:418–29.

Publisher's Note