

Factors Influencing Decisions to Withdraw or Continue Life Support and Attitudes towards Treatment of the Critically Ill: A Survey of Registered Nurses in Intensive Care Units *

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ABSTRACT

Introduction: To examine the major determinants influencing the decision to withdraw or continue life support and the attitudes of registered nurses towards the treatments for the critically ill patients in intensive care units (ICUs).

Methods: A self-administered questionnaire was distributed to a convenience sample of registered nurses working in 4 ICUs of a large teaching hospital in Singapore. The questionnaire consisted of 3 sections. The first section gathered details about the respondent's demographics; the second section required respondents to rate the importance of 18 different factors influencing the decision to withdraw or continue life support (1 = least important, 5 = most important) while the third section elicited responses about management strategy to 2 clinical scenarios from a possible pool of 6 different scenarios.

Results: Eighty-three nurses responded (response rate: 70%). Patient advance directives ($\mu = 3.63$), likelihood of surviving current episode ($\mu = 3.52$) and premorbid cognitive function ($\mu = 3.49$) were the most important consideration factors for the withdrawal of life support. Across various clinical scenarios, the majority (82.6%) reported that "continue with current management" was most likely to be in the patients' best interests. Level of agreement between what the respondents believed to be in the patient's best interest and their responses on what they would do if they encountered a similar case was good (Kappa=0.78).

Conclusion: Respondents regarded "Patient advanced directives" to be the most important factor in influencing decisions to withdraw or continue life support. In general, nurses were uncomfortable with complete withdrawal of life support. One way to minimise the impact of clinician's social, ethical, moral and religious values on medical decision making is to encourage more Singaporeans to make an Advance Medical Directive.

Keywords: attitude, critical care, life support, survey, withdraw

INTRODUCTION

The patients that stay in the intensive care unit (ICU) are considered the sickest patients in the hospitals that require advanced life support such as mechanical ventilation, inotropes or dialysis¹. Healthcare professionals are sometimes faced with the decision to withdraw or continue life support measures in the ICUs. This is to avoid using life

sustaining therapies that are unlikely to provide any benefits to the patients, and may potentially cause a patient and his or her family unnecessary suffering and prolongation of dying².

Withdrawal of life support involves discontinuation of one or more treatments without replacement by an equivalent treatment with the objectives of allowing the disease process to run its course and with the knowledge that this might lead to the patient's death³. The decision is usually requested or consented to by the patient or by the patient's family².

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ICU nurses are considered to have extensive experience in dealing with patients that die after the withdrawal of life support⁶. As a result, they are intricately involved with the end-of-life practices that occur in the ICUs and have to provide care to these patients and their families². A study by Jones *et al* explored the live experience of 7 critical care nurses in caring for patients who had their life supports withdrawn⁷. A nurse in this study felt that the actual process of withdrawal can be an uncomfortable experience, and it was also uncomfortable when there was a need to carry out a partial withdrawal therapy. Nurses also felt out of control of the situation when there was no clear direction in practice due to the indecisiveness about the withdrawal of life support treatment by the medical staff⁷. However, a self-administered questionnaire study that was done by Rocker and his colleagues found that majority of registered nurses were very comfortable with the decisions to withdraw ventilation, sedation or oxygen⁶.

There were a few studies which investigated factors influencing decisions to withdraw life support³⁻⁵. Two studies utilised the same questionnaire that was originated from Cook's study in 1995 which examined attitudes of ICU's physicians and nurses in Canada and Sweden respectively. The healthcare workers rated the "likelihood of surviving current episode", "likelihood of long term survival"³⁻⁵, "age of patient"^{4,5}, "premorbid cognitive function"⁴, and "patient advance directives"⁵ as the important factors influencing the decisions to withdraw life support.

The same studies also reported that the nurses' characteristics were significantly associated with the level of care chosen for the 12 hypothetical clinical scenarios in the questionnaires^{4,5}. They reported that characteristics such as the type of ICU in which the participants worked in^{4,5}, the number of years of ICU experience⁵, the number of years since graduation⁴, were associated with the level of care chosen, which contributed to the likelihood of respondents providing aggressive care for the dying patients.

In summary, existing literature suggested that the nurses' background, years of experience in ICU, their training background and the ICU that they are

working in might influence their attitudes and level of comfort towards the decisions to withdraw or continue life support treatments for their critically ill patients.

Keenan *et al* reported that nurses expressed increased satisfaction with their role in withdrawal of life support when they were more involved in its entire process, from planning to family discussion, as well as when they had more similar encounters⁸. Similarly, Ferrand *et al* found that nursing staff were dissatisfied with their role in the withdrawal of life support due to a lack of collaboration and involvement during the decision-making process³. Both studies demonstrated the possible relationship between nurses' satisfaction and their level of participation in the decision-making process^{3,8}. However, the nurses' level of participation in the decision-making process has increased over the years in some countries. A more recent survey by Latour *et al*, found that 91.8% of the respondents were directly involved in end-of-life patient care, while 73.4% reported active involvement in the decision-making process⁹. With nurses being more intensively involved in end-of-life care and decision-making, it is timely to explore factors that could influence their decision making and the nurses' attitudes towards care of the critically ill.

This study aimed to evaluate, among a cohort of nurses:

- the main factors, influencing decisions to withdraw or continue life support;
- if there was any association between ICU-trained and non-ICU trained nurses and the main factors influencing the decisions to withdraw or continue life support;
- if there was any association between patients' profiles and nurses' opinions about the level of care that patients should receive (based on patient profiles in hypothetical clinical scenarios).

METHODS

Study Design

This was a cross-sectional survey, using a self administered questionnaire.

Sample

Registered nurses who were working in 4 ICUs (surgical, medical, burns and neurology) of a large tertiary teaching hospital in Singapore. Convenience sampling method was adopted.

Data Collection Method

The surveys were distributed to potential subjects through their Senior Nurse Managers. A cover letter was included that outlined the purpose of the study and assured anonymity of the respondents. Participation was voluntary.

A collection box was given to the respective ICUs and the respondents were instructed to drop their completed questionnaire in it. Approval was obtained from the Institutional Review Board.

Survey Instrument

The questionnaire was adapted from that used in the study by Cook *et al*⁴. Permission was sought from the original author.

The Questionnaire Format

There were a total of 3 sets of questionnaires that were labelled A, B and C which varied only in section 3. The survey instrument had a total of 20 questions and was divided into 3 sections. The first section contained questions about the respondent's background. In the second section, the respondent was asked to rate the importance of 18 different factors for the decision to withdraw or continue life support, using a Likert scale ranging from 1 (not important) to 7 (very important). Factor 19 was included for respondents to add any other factor which they thought was essential. In the second part of section two, the respondents were asked, "in comparison to my colleagues' tendency to withdraw life support, I think I am "much more likely", "more likely", "as likely", "less likely" or "much less likely" to do so".

In the third section of the questionnaire, 2 clinical scenarios were presented in each questionnaire. The 2 scenarios of each questionnaire were drawn from a pool of 6 scenarios that was randomly selected from the 12 scenarios previously created by the original researcher. (Set A: Scenarios 1 & 2, Set B: Scenarios 3 & 4, Set C: Scenarios 5 & 6) Patients' profile were varied in the scenarios in terms of age (45 versus 75 years); premorbid cognitive function (highly functional versus encephalitis or Alzheimer's disease); likelihood of surviving current episode

(50% mortality [Acute Physiology and Chronic Health Evaluation II (APACHE) score=24] versus 90% mortality [APACHE II score=38]); and likelihood of long-term survival (90% 1-year mortality [breast cancer with vertebral metastasis] versus no underlying co-mortality affecting long-term survival).

First, respondents were asked to choose 1 of the 3 care approaches for each of the 2 scenarios. They were given the following options: (1) comfort care; (2) aggressive therapy for 24–48 hours; or (3) continue with aggressive therapy. Second, the respondents were asked to choose a management strategy for each of the 2 scenarios based solely on what they considered to be in the best interest of the patient. They were given the following options: (1) continue with full aggressive management and plan for dialysis if necessary; (2) continue with current management, add inotropic therapy, change antibiotics etc as needed, but do not start dialysis; (3) continue with current management but add no new therapeutic intervention; (4) discontinue inotropes and other maintenance therapy but continue mechanical ventilation and comfort measures; or (5) discontinue inotropes and mechanical ventilation but continue comfort measures. These 5 management strategies were known as "levels of care". Next, respondents were asked to consider all other factors which might also influence the decision and with this in mind, to choose the level of care closest to what they really would do facing the same 2 cases. Respondents were also asked if they would react in the same way in an actual situation. Lastly, the respondents were asked to rate "How confident are your decisions if you are confronted with a similar scenario in the ICU?"

To achieve face validity and readability, a pilot study was conducted with 10 nurses who were undergoing advanced training and were attached to a surgical ICU in 1 of the local tertiary hospitals.

Seventy per cent of the respondents stated that, to a large or moderate extent, the response options were simple and easy to understand. eighty per cent of the respondents stated that, to a very large, large or moderate extent, the questionnaire was likely to give a true picture about their attitudes and approaches. Eighty per cent of the respondents

Table 1. Demographic data of the critical care trained and non-trained respondents.

	Trained RNs, (n=51, 61.4%)	Non-trained RNs, (n=32, 38.6%)
Female, n (%)	46 (55.4)	30 (36.1)
20–30 years, n (%)	19 (22.9)	20 (24.0)
31–40 years, n (%)	25 (30.1)	10 (12.0)
41–50 years, n (%)	4 (4.8)	1 (1.2)
>50 years, n (%)	3 (3.6)	1 (1.2)
Singapore, n (%)	29 (34.9)	13 (15.7)
Malaysian, n (%)	9 (10.8)	2 (2.4)
China, n (%)	12 (14.5)	9 (10.8)
Others, n (%)	1 (1.2)	8 (9.6)
Chinese, n (%)	40 (48.2)	17 (20.5)
Working experience (as a Registered Nurse in Singapore) in years (mean \pm SD)	10.7 \pm 6.4	5.1 \pm 5.1
ICU experience in years (mean \pm SD)	6.7 \pm 5.4	3.2 \pm 4.2
SICU, n (%)	26 (31.3)	10 (12.0)
MICU, n (%)	15 (18.1)	10 (12.0)
NICU, n (%)	8 (9.6)	5 (6.0)
BICU, n (%)	2 (2.4)	7 (8.4)
Nursing Degree, n (%)	29 (34.9)	18 (21.7)
Free thinker, n (%)	16 (19.3)	7 (8.4)

stated that the questions included important factors influencing the decisions regarding levels of care in the ICU.

However, most students commented that in the second section of the questionnaire, the original 7-point Likert scale was too complicated and confusing. Therefore, the scale was changed to a 4-point Likert scale instead. The students were also unclear with the words “religious affiliation” and “religious conviction” which gave rise to a variety of interpretations. Definitions were provided in the final survey form.

Analysis

Descriptive statistics were performed on all demographic variables. Mann-Whitney U test was used to compare the ranking of the list of factors influencing decisions to withdraw or continue life support. The extent of agreement between the answers for the question on “What do you feel represents care that is most likely to be in the patient’s best interest?” and the question on “What would you really do if you were to encounter a similar case?” were analysed by Cohen’s Kappa test.

RESULTS

Eighty-three out of 118 registered nurses from 4 ICUs completed the survey, representing a response rate of 70%. There was almost an equal distribution of responses to the 3 sets of questionnaires—ie the 6 hypothetical clinical scenarios (n=26-scenarios 1 & 2; n=29-scenarios 3 & 4; n=28-scenarios 5 & 6).

Demographic Data

Table 1 summarises the demographics of the respondents. Most respondents fall into the age category of 26–30 years (36.1%); followed by 31–35 years (33.7%). Only 4 nurses were more than 50 years old. The majority were Chinese (68.7%), while 10.8% of respondents were either Burmese or Filipina. Fifty per cent of the nurses were born in Singapore, the other half were born in China, Malaysia, Myanmar and Philippines. Fifty-one (61%) of the respondents were trained in Critical Care nursing. Fifty-seven per cent of the respondents had degrees, and 27.7% stated that they were free-thinkers.

Factors Influencing Decision to Withdraw or Continue Life Support Measures

Ratings for the various factors influencing decisions to withdraw or continue life support measures are

Table 2. Ratings of factors influencing decisions to withdraw or continue life support measures.

	All Nurses	Trained		Non-trained		P-value
	Mean	Mean	Median	Mean	Median	
Patient Advance Directives	3.63	3.67	4.00	3.47	4.00	0.204
Likelihood of Surviving Current Episode	3.52	3.47	4.00	3.25	3.00	0.616
Premorbid Cognitive Function	3.49	3.59	4.00	3.59	4.00	0.059
Age	3.42	3.39	4.00	3.56	4.00	0.628
Likelihood of Long-Term Survival	3.35	3.31	3.00	3.34	3.00	0.812
Premorbid Physical Function	3.34	3.39	3.00	3.41	3.00	0.541
Compliance with Medical Care	3.11	3.14	3.00	3.09	3.00	0.674
Risk of Legal Implications	3.01	2.96	3.00	2.84	3.00	0.552
Family Directives / decisions	2.99	3.08	3.00	3.06	3.00	0.276
Hospital Policy	2.84	2.92	3.00	2.72	4.00	0.305
Drug Abuse	2.57	2.57	3.00	2.60	3.00	0.934
Premorbid Emotional Function	2.53	2.57	2.00	2.56	3.00	0.578
Alcohol Abuse	2.52	2.55	3.00	2.47	2.50	0.725
Religious Conviction	2.33	2.15	2.00	2.37	2.00	0.04
Socioeconomic Status / Occupation	2.22	2.20	2.00	2.47	3.00	0.781
Religious Affiliation	2.18	2.06	2.00	2.25	2.00	0.19
Ethnic Background	1.91	1.72	1.00	1.91	2.00	0.041
Employment Status	1.83	1.78	2.00	2.22	2.00	0.665

Ratings: 1 indicates that the factor is not important and 4 indicates that is very important.

presented in Table 2. Respondents rated patient advance directives ($\mu = 3.63$), likelihood of surviving current episode ($\mu = 3.52$), premorbid cognitive function ($\mu = 3.49$) and age ($\mu = 3.42$) as the most important consideration factors for withdrawal or continuation of life support. There was no significant difference in the main factors influencing decisions to withdraw or continue life support measures, between nurses who were trained in critical care and those who were not. Respondents stated that patient's ethnic background and employment status were the least important consideration factors.

Responses to Different Clinical Scenarios

Distribution of responses to the 6 clinical scenarios is presented in Table 3 (overleaf). In response to the question on "What care approaches is in the patient's best interest?" (Table 3a), most respondents (60.9%) chose "aggressive therapy for 24–48 hours". Similarly, in response to the question "Which course of action represents care that is most likely

in the patient's best interest?" (Table 3b), majority of respondents chose "continue with current management but add no new intervention" or "Full aggressive treatment". In response to the question "What would you do if you were faced with a case as in the scenario?" (Table 3c), majority of the respondents (38%) still chose "continue with current management but add no new intervention". Across various clinical scenarios, the majority (82.6%) (Fig. 1, following page) reported that "continue with current management" is most likely to be in the patients' best interests. The clustered bar chart in Fig 1 and the responses reported in Table 3b and 3c demonstrate that more respondents would consider treatment option on "continue with current management but add no new intervention" for older patients, whereas they were more likely to opt for "full aggressive treatment" whenever the patient's profile was younger.

The level of agreement between what the respondents believed to be in the patient's best

Table 3. Distribution (%) of responses to scenarios.

Patient Profile	Scenario Number					
	1	2	3	4	5	6
Age (years)	75	45	75	45	75	45
Chance of short-term survival (%)	10	50	50	10	10	50
Metastatic cancer / no cancer	No	Yes	Yes	No	Yes	No
Cognitive impairment	Yes	Yes	No	Yes	Yes	Yes
a. "What care approaches is in the patient's best interest?"						
▪ Comfort care	23.1	19.2	41.4	10.3	28.6	29.6
▪ Aggressive therapy for 24-48 hours	65.4	69.2	55.2	44.8	71.4	59.3
▪ Continue with aggressive therapy	11.5	11.5	3.4	44.8	0	11.1
b. "Which course of action represents care that is most likely in the patient's best interest?"						
1. Full aggressive treatment	11.5	34.6	10.3	62.1	25	35.7
2. Don't start dialysis	0	19.2	20.7	10.3	17.9	14.3
3. No new intervention	73.1	34.6	41.4	17.2	39.3	28.6
4. Mechanical ventilation	11.5	7.7	13.8	0	10.7	14.3
5. Comfort measures only	3.8	3.8	13.8	10.3	7.1	7.1
c. "What would you do if you were faced with a case as in the scenario?"						
1. Full aggressive treatment	11.5	38.5	14.3	58.6	28.6	35.7
2. Don't start dialysis	3.8	7.7	10.7	17.2	14.3	10.7
3. No new intervention	61.5	46.2	35.7	13.8	35.7	32.1
4. Mechanical ventilation	11.5	3.8	17.9	0	10.7	14.3
5. Comfort measures only	11.5	3.8	21.4	10.3	10.7	7.1
d. "How confident are your decision if you are confronted with similar scenario in the ICU?"						
▪ Very confident	3.8	11.5	6.9	32.1	14.3	25
▪ Moderately confident	53.8	50	62.1	46.4	42.9	35.7
▪ Somewhat confident	26.9	23.1	20.7	17.9	35.7	35.7
▪ Minimally confident	15.4	11.5	6.9	0	7.1	3.6
▪ Not at all confident	0	0	3.4	3.8	0	0

Total 3 sets of questionnaires were labelled as A, B and C. Scenario 1 and 2 were included in questionnaire A; scenario 2 and 3 were included in questionnaire B; scenario 4 and 5 were included in questionnaire C. Each scenario is characterised by these 4 factors, whether the patient is 75 or 45 years of age, whether the APACHE score indicated a 10% or 50% chance of survival; whether the patient had suffered with or without breast cancer with metastasis; and whether the patient suffered from prior cognitive impairment such as Alzheimer disease or herpes encephalitis.

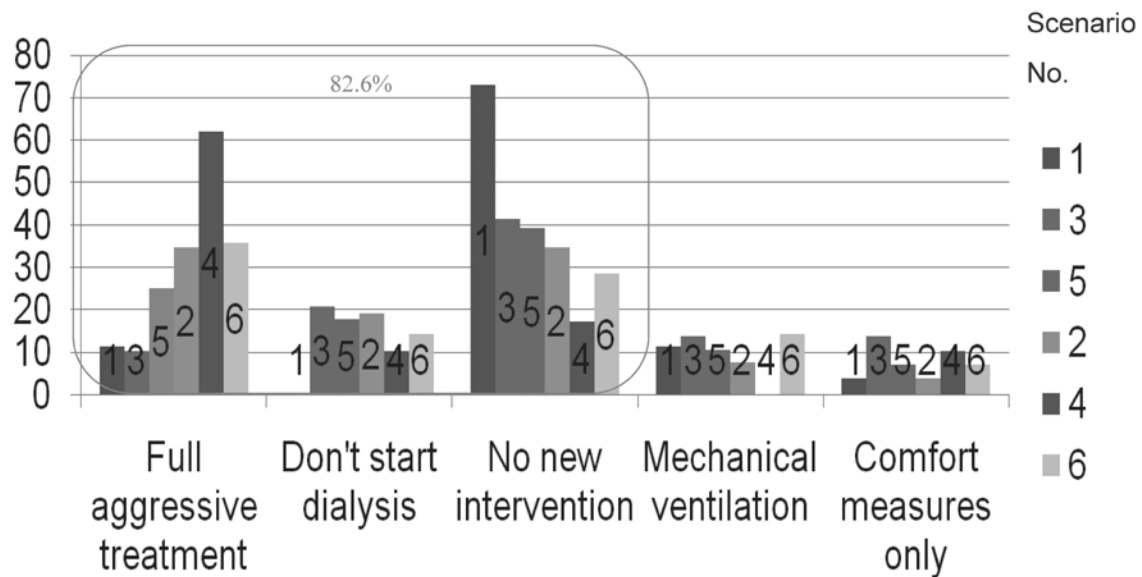


Fig.1. Distribution of responses to clinical scenarios for question on "Which course of action represents care that is most likely in the patient's best interest?".

interest and their responses on what they would do if they encountered a similar case was good (Kappa=0.78). In response to the last question on "How confident are your decision if you are confronted with similar scenario in the ICU?", most respondents (49%) felt that they were moderately confident with their decisions.

DISCUSSION

This study explored the attitudes of registered nurses regarding the decisions to withdraw or continue life support to critically ill patients in the intensive care unit. Among possible factors influencing decisions to withdraw or continue life support measures, respondents rated "patient advance directives", "likelihood of surviving current episode", "premorbid cognitive function" and "age" as the most important consideration factors for withdrawal or continuation of life support. There were no difference between nurses who were trained in critical care and those who were not. The findings were consistent with the earlier studies^{4,5} whereby the "presence of patient advance directives" and the "likelihood of surviving current episodes" were identified as the most important determinants for withdrawal of life supports by the Canadian and Swedish healthcare workers respectively. However, as our study's Likert scale

was different from that in previous studies, we could not directly compare the results of our study with that of previous studies.

Consistent with the study on Swedish intensive care personnel by Sjøkvist *et al*⁵, our study respondents also considered patient advance directive as one of the most important factors for withdrawal or continuation of life support. According to the end-of-life decision policy of the Singapore General Hospital¹⁰, any competent patient's expressed wishes must be included in the decision-making process about the patient's care in order to safeguard the patient's best interests and ensure good and sound medical judgement. The patient's wishes could be in the form of advance directives, living will or previously expressed desires with regards to types of treatment or life goals¹¹. In Singapore, a patient can state or register his or her wish in advance by making an advance medical directive (AMD) so that he/she will not be subjected to extraordinary life-sustaining treatments in the event of a terminal illness and he/she is unconscious or incapable of expressing rational judgement¹². Historically and psychologically, physicians are more reluctant to discontinue a treatment once it has begun. AMD will avoid any ambiguity in the future management of many terminally ill patients which will not only

save costs for the family concerned but will also save unnecessary suffering to both patients and their immediate families¹³. However, either because of poor awareness or a person's discomfort on talking about death, only about 10,000 Singaporeans have opted for AMD to date¹⁴. Moreover, it was suggested that the Singaporean public has a more paternalistic patient-doctor relationship compared to the West, thus more rely on doctors to make the decision for them or their loved ones¹¹. According to a community-based cross-sectional survey on the residents of 1 of the residential estates in Singapore¹⁵, only 37.9% of participants were aware of AMD. Tay *et al* suggested that by raising the awareness of the aims of the AMD with respect to terminal illness, it would encourage more people to sign up¹⁵.

Our study had explored the difference in respondents' choice in level of care when they considered on behalf of patients' best interest and what they actually would do when they encountered a similar prescribed scenario. The nurses had displayed excellent agreement ($\kappa > 0.75$) between responses to these 2 questions, in contrast to the previous study by Sjøkvist *et al*⁵ on Swedish nurses. This suggested that most of the respondents thought that the life support decision made in their ICU would more likely be in the patient's best interest and they were actually more agreeable with the life support treatment ordered by the physicians. However, this study was limited in that it was restricted to a single teaching hospital with only a small sample size, so the findings cannot be generalised to the population.

In response to the 6 hypothetical clinical scenarios, the majority of our respondents (82.6%) reported that they believed that the level of care corresponding with "continue with current management without removal of any life support" and more aggressive levels of care would be in the patient's best interest. However, the findings from the previous study by Sjøkvist *et al* showed that only 63.8% will choose to do more than continue current management when they were presented with the scenarios⁵. This suggests that local nurses are more uncomfortable with the withdrawal or discontinuation of life support for terminally ill patients. The discrepancy of our study results with the Swedish study was possibly due to the involvement of both physicians and nurses in the overseas research. The decision-making framework

of physicians could differ from that of nurses. As physicians, they have to depersonalise their previous encounters with patients, deciding how far the treatment should go based on patient's physiological findings and prognosis¹¹.

Although age was not rated by this study's respondents as the most important factor influencing decisions to withdraw or continue life support, the majority of respondents were more willing to consider "providing full aggressive to continue current treatment" in those scenarios where the patient was younger in age. In the study by Ferrand *et al*³, only a few nurses and physicians actually cited advanced patient age as a criterion to forego life-sustaining treatments. In fact, the retrospective review of records of 174 patients who died between 1996–1997 actually found that patients in whom life support was withheld or withdrawn were older in age even though their acuity of illness was less than those for whom aggressive treatment were continued¹⁶. This showed a disparity between perception and action. A bigger sample size is needed to examine this phenomenon.

The strength of this study included the adoption of a thoroughly pre-tested questionnaire and the questionnaire had been tested for face validity through a pilot test to ensure its suitability for use in the Asian context. The survey also achieved a high response rate (70%) among nurses. Due to the small sample size, the researchers were unable to perform multivariate regression to find out the demographic predictors of the level of care chosen for the scenarios. The survey only focused on nurses, thus we were unable to compare their attitudes with other decision makers in end-of-life care, such as the physicians and family. As stated by previous researchers^{4,5}, the survey measured what the respondents thought they would do in response to the hypothetical scenarios instead of what they would actually do in practice.

CONCLUSION

The respondents regarded Patient Advanced Directives to be the most important determinant influencing decisions to withdraw or continue life support. In general, local nurses were uncomfortable with complete withdrawal of life support. One way in which we can minimise the impact of the clinician's social, ethical, moral and religious values on medical decision-making is to

encourage more Singaporeans to make an Advance Medical Directive.

In our local setting, doctors are the main decision makers in life support approaches. We recommend that future studies include doctors in the survey to better understand their attitudes on withdrawing or continuing treatment among the critically ill, and to compare and contrast the results with that of other healthcare professionals and family members.

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