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Advance Directives Lessen the Decisional Burden of Surrogate Decision Making for the Chronically Critically Ill

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Abstract

Aim and objective—To identify the relationships among advance directive status, demographic characteristics, and decisional burden (role stress and depressive symptoms) of surrogate decision makers (SDMs) of patients with chronic critical illness.

Background—Although the prevalence of advance directives among Americans has increased, SDMs are ultimately responsible for complex medical decisions of the chronically critically ill patient. Decisional burden has lasting psychological effects on SDMs. There is insufficient evidence on the influence of advance directives on the decisional burden of surrogate decision makers of patients with chronic critical illness.

Design—The study was a secondary data analysis of cross-sectional data. Data were obtained from 489 surrogate decision makers of chronically critically ill patients at two academic medical centers in Northeast, Ohio, United States between September 2005 and May 2008.

Methods—Data were collected using demographic forms and questionnaires. A single item measure of role stress and the Center for Epidemiological Studies Depression scale were used to capture decisional burden of the SDM. Descriptive statistics, *t*-tests, chi-square, and path analyses were performed.

Results—Surrogate decision makers who were non-white, with low socioeconomic status, and low education level were less likely to have advance directive documentation for their chronically critically ill patient. The presence of an advance directive mitigates the decisional burden by directly reducing the SDM's role stress and indirectly lessening the severity of depressive symptoms.

Conclusions—Most SDMs of chronically critically ill patients will not have the benefit of knowing the patient's preferences for life-sustaining therapies and consequently be at risk for increased decisional burden.

Keywords

advance directives; surrogate decision makers; chronic critically ill; decisional burden; role stress; depressive symptoms; path analysis

INTRODUCTION

Recent advances in critical care therapeutics have brought forth a growing population of American adults with chronic critical illness, expected to reach 600,000 individuals each year by 2020 (Zilberberg, De Wit, Pirone, & Shorr, 2008; Zilberberg, Luippold, & Sulsky, 2008). Chronic critical illness is a life-limiting syndrome that requires continuous mechanical ventilation support for at least 2–4 weeks (Nelson, Cox, Hope, & Carson, 2010), metabolic derangements (Marik, 2010; Schulman & Mechanick, 2012), and transient or permanent states of cognitive impairment (Ehlenbach et al., 2010). Despite the staggering use of healthcare resources for chronically critically ill patients, health related quality of life and survival at one year post-hospitalization remain poor (Chelluri et al., 2004; Cox, Carson, & Lindquist, 2007; Cox et al., 2009; Douglas, Daly, Kelley, O'Toole, & Montenegro, 2007; Douglas, Daly, O'Toole, Kelley, & Montenegro, 2009).

Chronically critically ill patients require dynamic and complex plans of care. Previous studies indicate that a majority of CCI patients will have cognitive impairment that precludes from making healthcare decisions independently (Camhi et al., 2009; Daly et al., 2010; Nelson et al., 2007). Their severe condition and chronic state of cognitive impairment exacerbates the complexity of healthcare decision making and most often necessitates a surrogate decision maker (SDM) to make healthcare decisions on the patient's behalf (Daly, et al., 2010; Hickman, Daly, & Lee, 2012). For any given hospital admission, SDMs may make healthcare decisions about diagnostic and surgical procedures, use life-sustaining interventions (i.e., artificial nutrition, mechanical ventilation, and hemodialysis) and end-of-life care. Because SDMs often have a close relationship with the patient, the involvement of SDMs in the coordination of a CCI patient's care is paramount. In that, critical care clinicians will solicit SDMs for guidance on the patient's treatment preferences to inform care. Regrettably, many SDMs will not have discussions with the patient about his or her preferences towards life-sustaining therapies nor will the patient's preferences be outlined in a written advance directive (Camhi, et al., 2009). As a result, SDMs are faced with complex healthcare decisions with little or no preparation to make decisions aligned with the patient's wishes.

BACKGROUND

Recent U.S. healthcare reform legislation, the Patient Protection and Affordable Care and Patient Self-Determination Acts, highlights the importance of delivering healthcare that is aligned with the patient's preferences and values while maintaining an acceptable health related quality of life. Advance directives (ADs) are a fundamental component of advance care planning that informs patient-centered decision making among families and healthcare providers. These legal documents that provide information on the patient's preferences for aggressive medical therapies or designate an individual to make healthcare decisions when

the patient is seriously ill and cannot make participate in medical decision making. Advance directives have been traditionally viewed as a form of decision support for SDM that are thought to reduce the stress associated with surrogate decision making. Advance directives have a potential benefit not only to the patient, but also to society, because they declare the patient's preferences, promote shared decision making, enhance the quality of healthcare decisions, and are thought to reduce the use of healthcare resources for patients who do not want aggressive treatment (Barry & Edgman-Levitan, 2012; Kon, 2010; Silveira, Kim, & Langa, 2010).

Despite federal legislation in support of establishing ADs, aging Americans remain reluctant to complete an AD to outline their healthcare preferences for life-sustaining therapies in the event that they become seriously ill and are unable to make their own healthcare decisions (Camhi, et al., 2009). Nor is it usual for CCI patients to discuss their healthcare preferences with SDMs (Camhi, et al., 2009). As a consequence, SDMs are frequently required to make healthcare decisions on the patient's behalf without guidance and resulting in a heightened state of decisional burden.

Surrogate decision makers report a high negative emotional state associated with having to make a decision under high risk and/or uncertainty, which has been conceptualized as decisional burden. To some extent, decisional burden is the stress or strain associated with being a decision maker and the psychological consequences, such as depression, anxiety, and posttraumatic stress disorder, acquired from making a decision on the behalf of another person (Hickman & Douglas, 2010). This immense decisional burden can have longstanding psychological consequences on individuals who assume the SDM role. Hickman and colleagues (2010) reported significant levels of role stress and depression symptoms among SDMs of CCI patients, which highlight two dimensions of decisional burden.

Among SDMs of patients without an AD, it is speculated that the severity depressive symptoms among SDMs is intensified by their perceptions of the stress associated with making healthcare decisions on the behalf of their critically ill loved one. Factors that influence the appraisal of role stress include inadequate time for deliberation, lack of knowledge of the patient's preferences for life-sustaining therapies, and increased states of uncertainty (Hickman, et al., 2012; Hickman & Douglas, 2010; O'Connor & Jacobsen, 2007). Role stress and depressive symptoms are two negative psychological consequences that capture the decisional burden of surrogate decision making for CCI patients. To date, few studies (Kramer, Kavanaugh, Trentham-Dietz, Walsh, & Yonker, 2010; Teno, Gruneir, Schwartz, Nanda, & Wetle, 2007; Vig, Starks, Taylor, Hopley, & Fryer-Edwards, 2007) have examined the influence of ADs on mitigating the decisional burden associated with surrogate decision making.

The establishment of ADs has been postulated to reduce the SDM's decisional uncertainty and alleviate decisional burden associated with making healthcare decisions for patients who lack decisional capacity. There is limited scientific evidence among SDMs of the CCI that establishes direct or indirect effects of ADs on the decisional burden, which has been operationalized as the severity of roles stress and depressive symptoms. Based on the findings of Hickman and colleagues (2010) and a synthesis of literature on advance care

planning, and healthcare decision making under uncertainty studies (Kramer, et al., 2010; O'Connor & Jacobsen, 2007; O'Connor, Jacobsen, & Stacey, 2005; O'Connor, Legare, & Stacey, 2005; Teno, et al., 2007; Vig, et al., 2007), we posited that role stress had a direct influence on the SDM's appraisal of their depressive symptoms and the presence of an AD would blunt the effects of role stress and indirectly attenuate the severity of depressive symptoms among SDM's of CCI patients with an advance directive.

AIM

The aim of this report is to identify the relationships among AD status, demographic characteristics, and determine the direct and indirect predictive associations among SDMs demographics, AD status on decisional burden (role stress and depressive symptoms) of SDMs of patients with chronic critical illness.

METHODS

Design

This report is a secondary data analysis of a quasi-experimental study among SDMs of CCI patients to examine the effects of structured family meetings as decisional support for surrogate decision makers of CCI patients. In the present study, only baseline data were selected and entered into the statistical analyses to avoid the confounding effects associated with exposure to the experimental condition of the parent investigation. Douglas, Daly, & Lipson (2012), Daly et al., (2010), and Douglas, Daly, O'Toole, & Hickman (2009) describe the methods, procedures, and main outcomes of the parent investigation.

Sample

Surrogate decision makers of CCI patients (n=489) were recruited from five intensive care units at two academic medical centers in Cleveland, OH, USA. The inclusion criteria were adults (>18 years of age), recognized by the medical team as the next-of-kin or legal representative of a decisionally impaired patient (Glasgow coma scale [GCS] <6) who required at least three days of mechanical ventilation in one of five intensive care units. SDMs were excluded if they were: unavailable to meet with the medical team, unable to understand or speak English, or were responsible for making decisions for a critically ill patient that was ventilator dependent prior to admission to the intensive care unit.

Instruments

Demographic characteristics of SDMs—An investigator developed demographic and clinical characteristics form was used for data collection. Data on the SDMs' age (in years), gender, marital status, race/ethnicity, socioeconomic status, educational level, employment status, caregiver status, relationship to the chronically critically ill patient, and prior experience with a loved one in an intensive care unit.

Decisional Burden—Decisional burden was operationalized by two measures, a single-item measure of role stress and the Center for Epidemiological Studies (CESD) scale for depressive symptoms. Although relational concepts, role stress and depressive symptoms,

represent two conceptual dimensions, the acute stress of surrogate decision making and a negative emotional state, of decisional burden previously reported by SDMs of CCI patients.

Role stress: An investigator-derived single-item measure, “How stressful has it been making medical decisions for your loved one?” was used to capture surrogate decision makers’ perception of the psychological stress associated the surrogate decision maker role. This measure was constructed as visual analog scale by two anchors, “not at all stressful” and “very stressful”. Participants were asked to endorse their level of stress associated with the surrogate decision maker role by marking an “X” on a 10 millimeter line to reflect the magnitude of their perceived stress. The scoring for this single-item measure of role stress consisted of finding the center of the “X” mark and then drawing a perpendicular line through the center of the mark and intersects with the horizontal line containing the three anchors. Once the perpendicular line and intersects the horizontal line, the distance from zero to the perpendicular line drawn through the center of the “X” mark was calculated. The distance, calculated in millimeters, was divided by the total length of the scale (10 millimeters), and multiplied by 100 to transform the raw score into a percentage. Higher scores on this measure of role stress indicate increases in the level of psychological stress associated with surrogate decision maker role.

Severity of depressive symptoms: The Center for Epidemiological Studies Depression (CESD) scale was administered to participants as a measure of depressive symptoms (Radloff, 1977). This widely used measure of depressive symptoms has been used in numerous caregiver populations (Choi et al., 2012; Douglas, Daly, O’Toole, & Hickman, 2009; Joling et al., 2012), which includes surrogate decision makers of the CCI (Douglas & Daly, 2005; Douglas, Daly, O’Toole, & Hickman, 2009). This measure consists of 20 items that reflect symptoms associated with major depression. For each item, participants report the amount of time during the previous week that they were affected by a symptom on a four point Likert scale from 0 (rarely or none of the time) to 3 (most or all of the time)”. The CESD total score were calculated by summing the four reversed scored items and the remaining 15 negatively phrased items. Total scores for the CESD range from 0 to 60 and higher scores indicate a greater severity of depressive symptoms (Radloff, 1977).

Ethical approval

The institutional review board of University Hospitals Case Medical Center, Cleveland, OH, USA approved the procedures of this study involving human subjects. Eligible surrogate decision makers were approached by a research assistant (RA) who reviewed the risks and benefits, explained what was expected from subjects, and emphasized the voluntary nature of their participation. If the eligible SDM wished to participate in this study, written informed consent was obtained.

Procedures

Screening and recruitment—Prior to the recruitment of participants, approval was obtained from the institutional review boards at each academic medical center and written informed consent to collect patient data was obtained from the patient’s next-of-kin or legal representative designated to make medical decisions. Patients were screened by research

assistants for study eligibility each week day. Once a patient met the eligibility criteria, the research assistant would assess the most current Glasgow Coma Scale (GCS) score to determine the patient's decisional status. If the patient was sedated, confused, and had an eye score less than three or a motor score less than six on the GCS, the patient was determined to lack decisional capacity. To verify the patient's impaired decisional capacity, the attending ICU physician was asked to clinically assess the patient's decisional capacity. Only the next-of-kin or legal representatives of patients who were verified by an ICU physician as lacking decisional capacity were approached for written informed consent to participate in the parent study.

Data collection

After the obtaining of written informed consent from each participant, a face-to-face structured interview was conducted with each participant to administer the demographic and psychosocial questionnaires, which included the single-item measure of role stress and the CESD. These face-to-face structured interviews were approximately 20 minutes in duration. Following the completion of the each structured interview, the research assistant reviewed the patient's medical records to evaluate documentation of ADs (living will and/or durable power of attorney).

Evaluation of AD documentation—A patient was considered to have an AD if there was either documentation of a living will (LW), durable power of attorney (DPA) for health care, or both in their medical records. If there was no documentation of an LW or DPA in the patient's chart (either by mention of it in a registered nurse or physician note or by the placement of a copy of the AD in the subject's chart) then the variable was coded with a score of zero. However, if there was documentation (via registered nurse or physician notes, or copy placed in subject's chart) that the patient did have a LW or DPA, the variables was coded with a score of one. To assess the differences in demographic and clinical characteristics by AD status, a composite variable of LW and DPA variables was computed by recoding the presence of a LW and/or DPA with a score of one and the absence of LW and DPA with a score of zero.

Data analysis

Statistical analyses were performed using Statistical Package for Social Sciences (SPSS, version 20.0) in conjunction with Analysis of Moment Structures (AMOS, version 20.0). The statistical analyses for this secondary data analysis were conducted in four stages. First, descriptive statistics and measures of central tendency were analyzed to describe the demographic and clinical characteristics of this sample of surrogate decision makers. Second, differences in the mean scores of variables between surrogate decision makers by AD status (No AD vs. AD) were examined using independent samples *t* tests for continuous dependent variables and chi-square analyses were used for dichotomous dependent variables. Third, bivariate correlations were analyzed to investigate the associations among the study variables.

The final statistical method, a path analysis, was conducted using maximum likelihood estimation to examine the direct and indirect predictive associations among the study

variables. The sample size for this study ($n=182$ with complete data) meets the 10–20 cases per variable criterion needed to conduct a path analysis with sufficient statistical power (Kline, 2011). The initial path analysis model included all variables with bivariate correlation coefficients statistically significant at a level of less than .10, which enabled the construction of an exploratory path model that could be trimmed for parsimony.

To evaluate the fit of the path analysis model to these data, standard goodness-of-fit indices were examined and used to guide the model trimming procedures. The following goodness-of-fit indices were used to establish the validity of the path model in this sample of CCI patients: chi-square [χ^2 , $p>.05$], Tucker Lewis Index [TLI; $>.90$ acceptable, $>.95$ excellent], the Comparative Fit Index [CFI; $>.90$ acceptable, $>.95$ excellent], and Root Mean Square Error of Approximation [RMSEA; $<.08$ acceptable, $<.05$ excellent] (Bentler, 1990; Bentler & Bonnett, 1980; Brown & Cudeck, 1995; Tucker & Lewis, 1973). Standardized indirect and direct regression coefficients and the explained variance for each endogenous variable were calculated. A systematic method of model trimming, which consisted of individually removing statistically insignificant paths ($p \leq .05$), was conducted to achieve the most parsimonious path analysis model. Unless previously specified otherwise, the criterion for statistical significance was $p < .05$ for each statistical test.

RESULTS

Sample characteristics

The demographic and clinical characteristics of the sample are presented in Table 1. Participants were mostly middle-aged, white spouses or adult children of a CCI patient. In this sample, a majority (71%) of participants did not consider themselves as an informal caregiver for the patient and 58% reported that they did not have prior experience with a loved one hospitalized in an intensive care unit. Although participants were expected to take part in medical decision making on behalf of a CCI patient, a moderate proportion (76%) of participants were responsible for making medical decisions for patients without an AD (LW or DPA) documentation in the patient's medical records. There was no difference in decision burden (role stress and depression scores) when compared by AD status.

Comparison of SDM characteristics by AD status

As shown in Table 2, there are several demographic and clinical characteristics of SDMs that differ by AD status. In particular, participants who were nonwhite, with an educational level of high school or less, and an annual household income less than \$50,000 were more likely to make medical decisions for patients without ADs. The distribution of relatedness to patient was significantly different between SDMs with and without an AD. In particular, spouses and adult children were likely to have a CCI patient with an AD.

Construction and validation of the path model

Construction of the path model—Based on the correlation coefficients presented in Table 3 and a review of the literature, the initial path model, shown in Figure 1a, was constructed and evaluated for validity in this sample of SDMs. Guided by O'Connor's decision support framework (O'Connor et al., 1998) and a body of literature on advance care

planning (Teno, et al., 2007; Vig, et al., 2007) as well as the psychological impact of critical illness on families (Douglas, et al., 2012; Douglas, Daly, O'Toole, & Hickman, 2009; Hickman, et al., 2010; Hickman, et al., 2012; Hickman & Douglas, 2010; Nelson, et al., 2007), the initial path model was constructed to underscore the predicative associations between SDM characteristics (age, gender, and race), the presence or absence of an AD, on the two measures of decisional burden (the SDM's perception of role stress and depressive symptoms). As shown in Figure 2a, the initial path model illustrates direct and indirect relationships for SDM characteristics on role stress and depressive symptoms, and underscores that AD status has a direct relationship on the SDM's perception of role stress and indirectly influences their appraisals of depressive symptoms.

Validation of the path model—Once the initial path model was constructed, path analysis was conducted to assess the validity of the path model in this sample of SDMs. Although the initial hypothesized path analysis model had sufficient goodness-of-fit indices ($\chi^2 = 13.3$, $df = 8$, $p = .10$, CFI = .987, TLI = .954, RMSEA = .034), there were several path coefficients that did not meet the criterion for statistical significance. In order to identify the most parsimonious path analysis model, each insignificant path was independently removed. Based on a priori trimming procedures, paths that did not meet the retention criteria were individually removed from the analysis and the goodness-of-fit indices after removing each path are reported in Table 4. After the removal of 5 insignificant paths, the final path analysis model retained an excellent fit to these data ($\chi^2 = 17.1$, $df = 13$, $p = .197$, CFI = .990, TLI = .979, RMSEA = .023) and established the validity of the path analysis model.

As shown in Figure 2b, the final path analysis model accounted for 4% of the explained variance in role stress and 20% of the explained variance in depressive symptoms. The SDM's age ($\beta = -.14$, $p = .02$) and documentation of a living will in the patient's medical records ($\beta = -.13$, $p = .007$) were two statistically significant direct predictors that reduced the participant's appraisal of role stress. The second endogenous variable, depressive symptoms, was predicted by role stress ($\beta = .43$, $p < .001$) and the SDM's gender ($\beta = -.13$, $p = .04$) while adjusting for the influence of documentation of a living will. In addition, there were four statistically significant correlational paths between demographic and clinical characteristics and AD (Figure 2b).

DISCUSSION

Chronic critical illness is anticipated to annually affect more than 600,000 Americans by year 2020 (Zilberberg, De Wit, et al., 2008; Zilberberg, de Wit, & Shorr, 2012; Zilberberg, Luippold, et al., 2008) and represents an emerging worldwide dilemma associated with growing populations of aging adults and advances in critical care therapeutics (Carson, Cox, Holmes, Howard, & Carey, 2006; MacIntyre, 2012; Nelson, et al., 2010). This life-limiting syndrome is associated with an increased incidence of cognitive impairment among affected patients and exposes family members and other designated persons to the burden of surrogate decision making. In the United States, federal legislation underscores the importance of establishing ADs to foster patient-centered decision making and alleviate the decisional burden associated with making complex healthcare decisions. However, most

patients are affected by chronic critical illness will not have established an ADs or had a prior discussion with their designated surrogate decision maker about their preferences for life-sustaining treatments. This secondary data analysis aimed to describe the demographic characteristics of SDMs of patients with and without an AD and validate a path model that specifies the influence of ADs on the perception of decisional burden among SDMs of CCI patients.

First, there were several differences in demographic characteristics that varied among SDMs of patients with and without an established AD. In the U.S., the AD completion rates continue to increase; however, in this sample only 24% of CCI patients had documentation of an AD and confirm that majority of the SDMs were expected to make healthcare decision limited understanding of the patient's wishes towards life-sustaining treatments. Notably, SDMs demographics, such as being white, a spouse or adult child with at least a high school education, were associated with the presence of an AD among CCI patients. Additionally, the presence of an AD was associated with SDMs who had a prior experience with a loved one in an intensive care unit and identified themselves as informal caregivers for a CCI patient. The extant literature on advance care planning interventions and informal caregiver research further support our findings regarding the clinical and demographic differences found in this sample of SDMs and CCI patients (Camhi, et al., 2009; Silveira, et al., 2010; Teno, et al., 2007; Vig, et al., 2007). Thus, the differences in clinical and demographic characteristics found in this study are well-established and consistent with the body of literature on AD completion rates across clinical populations of older adults.

Second, construction and validation of a path model was conducted to assess the predictive associations among SDM characteristics and ADs (living will and durable power of attorney) on measures of decisional burden. As shown in Figure 2b, the final path model established that the presence of a living will and the SDM's age directly predicted the severity of the SDM's role stress. Additionally, the SDM's gender and role stress were direct predictors of the SDM's depressive symptoms. These findings confirm that, when adjusting for the SDM's gender, role stress mediates the relationship between AD status (presence of a living will) and the severity of depression among SDMs of CCI patients. The previous research (Silveira, et al., 2010; Teno, et al., 2007; Vig, et al., 2007) have examined the impact of ADs on family and patient outcomes and found that decisional burden was lessen when patients had an AD. However, this study is first to establish a mechanism through which ADs serve as an effective form of decision support that can mitigate the decisional burden associated with surrogate decision making for CCI patients. These results can used to develop efficacious decision support interventions aimed at attenuating the severity of role stress and depressive symptoms among SDMs of CCI patients.

Limitations

There are several limitations that affect the internal and external validity of this research. First, this study is a secondary data analysis with a cross-sectional design. Inherent to secondary data analysis, the investigators were limited by the variables contained within the dataset of the parent investigation, which constrained the dimensionality of decisional burden to measures of role stress and depression. Second, the cross-sectional design of this

study does not permit evaluation of causal relationships across time. Lastly, the composition of the clinical and demographic characteristics of this convenience sample restricts the external generalizability of these findings to white, females who were the spouse or adult child of a CCI patient.

CONCLUSIONS

Chronic critical illness is recognized as emerging clinical population who require complex treatment decisions, which include life-sustaining treatments, palliative, and end-of life care. Advance directives are a primary prevention strategy that works to alleviate decisional burden. However, Americans are reluctant to preemptively complete these legal documents. As a result, a majority of family members are thrust into the SDM role and do not have knowledge of the patient's preferences towards life-sustaining treatments, palliative, and end-of-life care. In particular, this study identified that SDMs who were non-white and had lower educational or socioeconomic status were associated with patients without an AD. Yet, the presence of an AD, particularly a living will, helped to attenuate the decisional burden associated with surrogate decision making for a CCI patient. Further exploration is needed to assess the longitudinal effects of ADs on the SDM's decisional burden and evaluating opportunities to intervene with context specific and tailored decision support for SDMs of patients who do not have established ADs.

RELEVANCE TO CLINICAL PRACTICE

Most SDMs of chronically critically ill patients will not have the benefit of knowing the patient's preferences for life-sustaining therapies and consequently be at high risk decisional burden. The results of this study are clinically useful and underscore the need for patient and family education on advance care planning and offer an opportunity to complete an AD before the patient is discharged from the hospital.

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Relevance to clinical practice

Study results are clinically useful for patient education on the influence of advance directives. Patients may be informed that SDMs without advance directives are at risk for increased decisional burden and will require decisional support to facilitate patient-centered decision making.

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SUMMARY BOX**What does this paper contribute to the wider global clinical community?**

- Establishing an advance directive or having discussions about life-sustaining treatments may reduce decisional burden and improve the quality of shared decision making.
- Advance directives assist with the delivery of patient-centered care and reduce the psychological risks for surrogate decision makers.

Figure 1.

Participant flow chart. The database consisted of a 489 participants enrolled in the parent investigation. Of these 489 participants, 37% ($n=182$) of participants completed the decisional burden measures, which was used to examine the validity of hypothesized path model. SDMs = surrogate decision makers and CCI = chronically critically ill.

Figure 2.

Path analysis models. (A) Initial path analysis model with all hypothesized direct and indirect paths included, and (B) final path analysis model with all path coefficients statistically significant ($p < .05$). Standardized path coefficients are provided above each path and the explained variance of each endogenous variable is provided in bold. SDM: surrogate decision maker. DPA: durable power of attorney.

Table 1

Demographics and Clinical Characteristics of Surrogate Decision Makers (n =489)

	<i>n</i>	<i>Frequency (no.)</i>	<i>Percentage (%)</i>
Age (years, $M \pm SD$)	483	53.1	14.3
Gender: female	489	370	76
Race: White	489	338	69
Marital status: Married	488	345	71
Caregiver status: Yes	486	141	29
Prior ICU exposure: Yes	486	198	42
Relationship to patient	489		
Spouse		180	37
Adult child		138	28
Other (DPA, other relative, non-relative)		171	35
Employment status: Employed	488	284	58
Annual household income	447		
\$20, 999		103	23
\$21,000 to \$49, 999		179	40
\$50, 000		165	37
Educational level	481		
< High school education		43	9
High school education		57	68
Undergraduate and/or graduate studies		20	23
Living will status: Yes	489	85	17
DPA status: Yes	489	98	20

Note. ICU = intensive care unit, DPA= durable power of attorney

Table 2
Comparison of Demographic and Clinical Characteristics of Surrogate Decision Makers by Advance Directive Status

Variable	Advance Directives Status							
	AD				No AD			
	<i>n</i>	<i>M</i>	<i>SD</i>		<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>
Age (in years)	115	55.2	13.8		368	52.4	14.5	-1.82
Role stress	41	55.4	32.8		141	60.9	30.5	.996
Depressive symptoms	109	23.3	11.9		357	23.6	11.2	.246
	<i>n</i>		%		<i>n</i>		%	χ^2
Race								
White	96	83			242	65		14.5**
Non-white	19	17			132	35		
Relationship to patient								
Spouse	44	38			136	36		13.0**
Adult child	45	39			93	25		
Other (sibling, cousin, friend or DPA)	26	23			145	39		
Annual household income								
\$20,999	17	16			86	25		7.89*
\$21,000 to \$49,999	37	36			142	41		
\$50,000	50	48			115	34		
Educational level								
< High school education	9	8			34	9		11.7**
High school education	64	57			261	71		
Undergraduate or graduate education	40	35			73	20		
Prior ICU experience:								
Yes	37	34			161	44		4.07*
No	73	66			201	56		
Caregiver status:								
Yes	46	40			95	74		8.83**

Variable	Advance Directives Status						<i>t</i>
	AD			No AD			
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	
No		69	60		276	26	

Note. DPA: durable power of attorney; ICU: intensive care unit.

* $p<.05$;
** $p<.01$

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Summary of Correlation Coefficients for Clinical Characteristics, Advance Directives, and Decisional Burden

Table 3

Variable	<i>n</i>	1	2	3	4	5	6	7	<i>M</i>	<i>SD</i>
1. SDM Gender	489	—	.03	.08*	-.02	-.02	-.05	-.13***	—	—
2. SDM Age	483		—	.14***	.11**	.08*	-.08	-.11**	—	—
3. SDM Race	489			—	.17***	.16***	-.04	.02	—	—
4. Living will	489				—	.67***	-.12*	-.07	—	—
5. DPA	489					—	-.07	.01	—	—
6. Role Stress	182						—	.43***	59.6	31.0
7. Depressive Symptoms	466							—	23.6	11.3

Note. SDM = surrogate decision maker; SDM Gender (0 = female, 1 = male); SDM Age = age in years; DPA = durable power of attorney (0 = no, 1 = yes); SDM race (0 = white, 1 = non-white); Living will (0 = no, 1 = yes). Two-tailed correlation coefficients are reported.

* $p < .10$,

** $p < .05$,

*** $p < .01$

Table 4

Path Analysis: Path Removal and Goodness of Fit Indices

Path Analysis Model	χ^2	df	p	CFI	TLI	RMSEA
1. Initial	13.3	8	.100	.987	.954	.034
2. Removed path between SDM Race and Role stress	13.3	9	.147	.989	.967	.029
3. Removed path between DPA and Role stress	13.4	10	.201	.992	.977	.024
4. Removed path between SDM Gender and Role stress	13.9	11	.240	.993	.982	.021
5. Removed path between SDM Race and Depressive symptoms	15.7	12	.206	.991	.979	.023
6. Removed path between SDM Age and Depressive symptoms	17.1	13	.197	.990	.979	.023

Note. $n = 182$, SDM: surrogate decision maker; DPA: durable power of attorney; CFI: comparative fit index; TLI: Tucker Lewis index; RMSEA: root mean square error of approximation