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First-ranked considerations for a good death among adults in Taiwan: a survey-weighted cross-sectional analysis

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Abstract

Background

A good death encompasses physical comfort, psychological well-being, preparation for death, family relationships, and care arrangements. This study aimed to estimate the first-ranked considerations for a good death among adults in Taiwan and examine their associations with sex, age, and educational attainment.

Methods

This study analysed data from the 2021 Taiwan Social Change Survey (Round 8, Year 2): Health. Descriptive statistics, second-order Rao–Scott design-adjusted tests, and multinomial logistic regression were used.

Results

Freedom from physical suffering was most frequently ranked first (51.2%), followed by leaving no burden or regrets after death (20.9%). First-ranked considerations for a good death varied by sex, age, and educational attainment. Compared with adults aged 60 years or older, those aged 18–39 years were more likely to rank leaving no burden or regrets after death rather than freedom from physical suffering as their first consideration; women were less likely than men to make this choice.

Conclusions

The foremost consideration for a good death among adults in Taiwan was freedom from physical suffering, followed by leaving no burden or regrets after death. Palliative care and advance care planning discussions can begin with symptom relief and then clarify patients' family concerns, psychological needs, preparation for death, and expectations for care.

Background

The meaning of a good death

The quality of end-of-life care must be considered from several perspectives. In addition to appropriate treatment, care should relieve suffering, respect patients' choices, and preserve their relationships with significant others. A qualitative study involving patients receiving dialysis, people living with HIV, and residents of long-term care facilities identified five elements of high-quality end-of-life care: adequate control of pain and other symptoms, avoidance of inappropriate prolongation of dying, preservation of a sense of control, reduction of burden on others, and continued connection with loved ones [1].

Preparation for death involves more than psychological acceptance; it also includes appointing a surrogate decision-maker, understanding likely changes as illness worsens, addressing financial matters, documenting treatment preferences, and communicating with a physician who is willing to discuss death [2]. Seriously ill patients and their families also value trust in the treating physician, avoidance of unwanted life-sustaining treatment, effective communication and continuity of care, and opportunities to complete unfinished matters [3]. People therefore consider physical comfort, medical decisions, family responsibilities, important relationships, and life completion at the end of life. The present study asks which of these considerations is placed first when trade-offs are required.

Advance care planning (ACP) can help adults articulate their values, goals of care, and preferences for future medical treatment so that care during serious illness is more closely aligned with their expectations [4]. Views about treatment during serious illness and the conditions of a good death may change over time. Patients approaching the end of life, family members, and healthcare professionals therefore need continuing discussion throughout the course of illness; patients should also be encouraged to appoint a surrogate decision-maker and to document and periodically review their preferences when appropriate [5]. Palliative care complements this process by integrating symptom management, psychosocial support, communication, and assistance with complex decisions through interdisciplinary care, thereby connecting patients' valued life goals with care choices [6]. A systematic review by Witteman et al. found that structured values-clarification methods, including worksheets and interactive tools that help users identify and express what matters to them, can modestly reduce decisional conflict and value–choice inconsistency across health decision-making contexts [7]. Accordingly, asking adults only whether particular conditions of a good death are important may lead them to endorse several conditions, whereas requiring a ranking reveals which option they prioritise within a common set.

Multidimensional attributes of a good death

Previous research consistently indicates that a good death is not determined by a single condition but comprises multiple, potentially competing experiences. In a national survey of patients, bereaved family members, physicians, and other care providers, Steinhauser et al. identified 26 of 44 end-of-life attributes that were widely valued across all four groups. Compared with physicians, patients placed greater importance on remaining mentally aware, arranging funerals, avoiding burden on others, helping others, and attaining spiritual peace [8]. Using interview data, the same research team identified six components of a good death: pain and symptom control, clear decision-making, preparation for death, life completion, contribution to others, and being regarded at the end of life as a whole person with a life history; physicians' accounts placed relatively greater emphasis on biomedical concerns [9]. Together, these studies indicate that some attributes recur across groups, although patients, families, and professionals may differ in the aspects they value most.

This multidimensionality is also reflected in measures of the quality of dying and death. The Quality of Dying and Death framework defines quality as the degree of congruence between a person's preferred manner of dying and actual experience, assessing six domains: symptoms and personal care,

preparation for death, the moment of death, family, treatment preferences, and whole-person concerns [10]. Subsequent factor analysis based on bereaved-family proxy assessments identified four distinguishable but related domains: symptom control, preparation, connectedness with significant others, and transcendent meaning or spiritual experience [11]. A broader systematic review synthesised 11 conditions of a good death, encompassing relief of physical and emotional suffering, effective communication, religious and cultural rituals, treatment autonomy, preferred place of death, avoidance of unnecessary life prolongation, family support, and freedom from burdening others [12]. A review centred on patients' perspectives likewise found recurring themes of pain and symptom control, clear decision-making, life completion, being regarded as a whole person, preparation for death, and contribution to others; however, their meaning and relative importance varied with culture, religion, financial circumstances, illness, age, and life context [13]. The literature thus supports common elements of a good death while also showing variation in which element individuals place first.

Research setting, illness experience, and respondent role further shape which good-death attributes become salient. A systematic review of hospital-based studies found that patients and families jointly valued effective communication and shared decision-making, professional care, respect and empathy, and trust in clinicians. Patients additionally emphasised an appropriate care environment and reduced burden on others, whereas family members were more concerned about financial arrangements [14]. Among Swedish patients receiving palliative cancer care, a good death was described as a process of confronting death, preparing oneself and others, and completing life in comfort. Comfort included relief of suffering as well as preservation of independence and social relationships for as long as possible [15]. These findings show how illness experience and care setting can bring particular aspects of a good death to the foreground.

The conditions associated with a good death also vary across societies. Studies of general populations and bereaved families indicate that some attributes are widely valued, whereas others depend more strongly on individual or social context. A nationwide Japanese survey identified 18 attributes of a good death. Ten—including physical and psychological comfort, preferred place of death, good relationships with healthcare professionals and family, freedom from burdening others, individual respect, and life completion—were valued relatively consistently across groups, whereas evaluations of the remaining eight varied more substantially [16]. A subsequent Good Death Inventory developed from bereaved family members' perspectives similarly distinguished 10 core domains from eight domains more dependent on individual values [17]. A nationwide Korean survey comparing patients with cancer, family caregivers, physicians, and the general population found shared emphasis on family presence, not burdening the family, and completing unfinished matters, although their specific rankings differed [18, 19]. In a representative survey of adults aged 55 years or older in Switzerland, most good-death attributes were widely rated as important, but ratings varied across demographic groups and language regions [20]. A survey in seven European countries likewise found that most respondents prioritised quality of remaining life when presented with hypothetical serious illness and limited life expectancy, although the proportions differed across countries [21]. These findings indicate that respondent role, question content, and social context can shape the ordering of good-death priorities.

Beyond population and clinical context, question format can affect the apparent ordering of good-death attributes. When respondents are asked how important each condition is, they may assign high ratings to several options; ranking questions instead require direct comparisons and an explicit order of priority. Krosnick and Alwin found that some respondents avoided difficult trade-offs by assigning uniformly high ratings [22]. Preferences may also change when questions provide information about treatment burden, functions that may be preserved or lost after treatment, and the probability of adverse outcomes [23]. Interpretations of the 'most important' condition of a good death must therefore consider both response format and decision context.

Different measurement tools elicit different expressions of preference. Health-outcome prioritisation tools ask older adults to rank goals such as extending life, maintaining independence, reducing pain, and reducing other symptoms, thereby identifying which goal takes precedence when goals conflict [24]. Discrete-choice experiments instead present repeated choices between hypothetical care profiles that differ across several attributes, allowing the relative contribution of each attribute to be estimated. Leng et al. used this approach with patients with terminal cancer in mainland China, asking them to choose among profiles differing in hospital stay, life extension, quality of life, treatment side effects, place of death, and out-of-pocket cost. Better quality of life, moderate life extension, home death, and lower cost all influenced choices [25]. In contrast, Huang et al. asked general outpatients and healthcare professionals to rate individual good-death attributes. Both groups valued multiple physical, psychological, and relational domains, but differed in their evaluations of physical and psychological comfort, preferred place, relationships with healthcare professionals, and natural death [26]. These studies demonstrate that priorities may differ according to the trade-offs and response tasks built into the measurement approach.

Previous Taiwanese studies have also used different measurement approaches. Leung et al. administered a 53-item good-death questionnaire to 184 adults and identified five factors: autonomy and choice, wish fulfilment, preparation for death, spiritual support and afterlife, and symptom control [27]. In an older community in northern Taiwan, Shen et al. used narrative-card selection and token allocation to help 16 healthy older adults select and weight end-of-life priorities. This small exploratory study primarily assessed the preliminary feasibility of a conversation tool; participants emphasised dignity, protection of family members' emotions, physical comfort, and dying at home [28]. The former study examined the dimensions constituting a good death, while the latter explored values trade-offs during an activity. Neither used probability sampling to estimate the distribution of first-ranked preferences in Taiwan's adult population. Existing research therefore does not establish which good-death attribute adults in Taiwan place first or whether sex, age, and educational attainment remain associated with the first-ranked choice when considered simultaneously.

A good death in Taiwanese society

Population ageing continues worldwide [29], increasing the importance of planning end-of-life care and services. By the end of April 2026, adults aged 65 years or older accounted for more than one fifth of

Taiwan's registered population, marking its transition to a super-aged society [30]. The Hospice Palliative Care Act protects terminally ill patients' rights to choose hospice palliative care and to refuse cardiopulmonary resuscitation or life-sustaining treatment [31]. The Patient Right to Autonomy Act provides procedures for advance care planning consultations and advance decisions, enabling people to state in advance whether they would accept or refuse life-sustaining treatment and artificial nutrition and hydration under specified end-of-life conditions [32]. Palliative care has developed over many years in Taiwan, with relevant services gradually incorporated into National Health Insurance [33]. These laws protect patients' rights and establish formal procedures, but end-of-life decisions remain embedded in interactions among patients, families, surrogate decision-makers, and healthcare teams.

A nationwide prospective study of patients with cancer admitted to inpatient hospice wards in Taiwan found that clinician-assessed patient autonomy was positively associated with quality of dying [34]. This finding suggests that greater self-determination in medical decisions and end-of-life arrangements may accompany better end-of-life experiences. Clinically, autonomy may give patients a sense of control and dignity and may help reduce psychological distress near the end of life.

Cross-cultural ethical discussions have often relied on an oversimplified contrast in which Western societies emphasise individual autonomy whereas East Asian or Confucian societies defer decisions to the family. Culture, however, is dynamic. In contemporary Taiwanese society and clinical practice, demand for the expression of patients' own wishes has increased, while biomedical ethics in Taiwan has undergone substantial Westernisation and modernisation. Over the past two decades, individual autonomy and self-determination have become markedly more prominent; East Asian cultural context therefore cannot justify assuming that family decisions always take precedence over individual wishes [35]. Traditional Western accounts of autonomy have themselves been criticised as atomistic or isolated because they assume an entirely independent rational individual. In their systematic review of relational autonomy in end-of-life care, Gómez-Vírseda et al. argued that relational autonomy better reflects clinical reality. Patients' autonomy is shaped by relationships of dependence, family support, and clinical interaction. Its purpose is not to replace the patient with the family, but to enable patients' values and wishes to be expressed through support and dialogue. From this perspective, the family can serve as a communicative support for patients' agency, allowing patient-centred self-determination to be realised within East Asian family relationships [36].

Family involvement in end-of-life decisions can provide support while also creating communication barriers [37]. Taiwanese evidence indicates limited concordance between patients with terminal cancer and family caregivers in their knowledge of, and preferences for, diagnostic and prognostic disclosure; patients generally preferred to receive diagnostic information themselves [38]. Clinical practice also reflects increasing recognition of patient autonomy. Among 1,338 statutory do-not-resuscitate documents at one medical centre, 56.35% were signed by patients, whereas 43.65% were signed by close relatives. Such family signatures are permitted only under strict legal conditions, including when patients cannot express their wishes, and do not grant relatives unrestricted decision-making authority [31, 39]. A cross-national survey suggested that some people in Taiwan might prefer family members to

decide for them during serious illness, but its non-probability sample precludes population-level inference [40].

Taken together, end-of-life medical decisions in Taiwan are shaped by legal protections, personal autonomy, and family dynamics. Culture influences perceptions of illness-related suffering and communication practices, but substantial diversity exists within cultural groups; cultural stereotypes should not be used to infer an individual patient's preferences [41]. An overview of systematic reviews also found that the clearest benefits of ACP lie in improving communication and accurately documenting preferences. Interactive discussion, decision aids, and collaboration among patients, families, and clinicians are central features of effective ACP [42]. Legal institutions and family context are therefore essential background conditions, but they cannot replace direct dialogue with patients or respect for their individual wishes.

Against this background, we used the 2021 Taiwan Social Change Survey (Round 8, Year 2): Health dataset [43] to examine the overall distribution of first-ranked choices among eight good-death attributes and their associations with sex, age, and educational attainment.

The study addressed three questions: (1) Which of the eight good-death attributes was most frequently ranked first by adults in Taiwan? (2) Did the overall eight-category distribution differ by sex, age, and educational attainment? (3) After mutual adjustment for sex, age, and educational attainment, did these characteristics remain associated with the first-ranked attribute?

Methods

Study design and data source

This cross-sectional secondary analysis used the 2021 Taiwan Social Change Survey (Round 8, Year 2): Health (C00390_2), released in 2022 by the Survey Research Data Archive (SRDA), Academia Sinica [43]. The TSCS is a repeated cross-sectional social survey. The Health questionnaire drew on the corresponding 2011 module and incorporated relevant modules from the 2020 East Asian Social Survey and the 2021 International Social Survey Programme [44]. The target population comprised usual residents of Taiwan aged 18 years or older covered by the address-based sampling frame, excluding Kinmen and Lienchiang counties and residents of institutions such as military facilities, hospitals, nursing institutions, dormitories, and prisons. A stratified multistage probability-proportional-to-size sampling design was used [44]. Computer-assisted face-to-face interviews were conducted from 1 September 2021 to 18 April 2022, yielding 1,604 completed interviews. The fieldwork report documented a crude completion rate of 36% and an eligibility-adjusted rate of 43% [44]. The released data contained 19 strata and 71 primary sampling units, yielding 52 design degrees of freedom. All analyses incorporated the final calibration weight, strata, and clusters. The original survey was conducted under a protocol approved by the Institutional Review Board for Humanities & Social Science Research, Academia Sinica (AS-IRB-HS 19034 v.6).

According to the dataset documentation and original survey records, the survey was conducted under a protocol approved by the Institutional Review Board for Humanities & Social Science Research, Academia Sinica (AS-IRB-HS 19034 v.6), and informed consent was obtained from participants. This study used de-identified secondary data under SRDA data-use requirements and involved no new recruitment, contact, or intervention [43, 44]. Reporting followed the STROBE statement [46].

Outcome and analytic samples

The outcome was derived from the question, 'For you personally, what does a "good death" mean?' Respondents selected the two most important attributes from eight options and ranked them first and second: freedom from physical suffering; freedom from psychological suffering; being prepared for one's own death; having family present at death; leaving no burden or regrets after death; dying in a preferred place; dying at a preferred time; and receiving ideal-quality medical care before death [45].

We treated the first-ranked response as a nominal multicategory outcome. A valid first-ranked response was sufficient for inclusion, regardless of whether the second-ranked item was completed. The second-ranked choice was not analysed; the findings therefore indicate only which attribute respondents selected first and do not represent a complete ranking of all eight attributes. The analysis focused on associations of sex, age, and educational attainment with the first-ranked attribute. Age was grouped as 18–39, 40–59, and ≥ 60 years, and education as junior high school or below, senior high or vocational school, and college or above.

Of 1,604 completed interviews, 1,540 respondents selected one of the eight listed attributes first and were included in the analysis. Responses coded as other (n = 15), not recorded (n = 12), do not know (n = 26), or refusal (n = 11) were excluded.

Survey analysis

Analyses were conducted in Python. Data were imported with pyreadstat and managed with pandas; numerical estimation used NumPy and SciPy. Descriptive and group comparisons retained all eight outcome categories and reported unweighted counts and survey-weighted percentages. Standard errors and tests used Taylor linearisation with within-stratum centring and a small-sample correction. Confidence intervals for proportions were calculated on the logit scale using the t distribution with 52 design degrees of freedom and transformed back to the probability scale. Differences in the eight-category distribution by sex, age, and education were assessed using second-order Rao–Scott corrections with Satterthwaite F approximations [47]. Sex and age analyses included 1,540 respondents; education analyses included 1,539 because one response could not be classified. These were omnibus tests; no category-specific post hoc tests were conducted.

Multinomial logistic regression

For the third research question, we estimated a survey-weighted multinomial logistic regression using pseudo-maximum likelihood. Descriptive analyses retained all eight response categories. Dying in a preferred place (n = 13) and dying at a preferred time (n = 22) were reported separately in those analyses but omitted from the adjusted model because their small unweighted counts could produce sparse data and unstable category-specific estimates. Place and timing represented distinct preferences and were therefore not combined. The remaining six categories included 1,505 respondents; after excluding one respondent with unclassifiable education, the complete-case model included 1,504 respondents. No imputation was performed. Sex, age, and educational attainment were entered simultaneously. Freedom from physical suffering was the reference outcome; covariate reference groups were men, age ≥ 60 years, and senior high or vocational education.

To account for the complex sampling design, robust standard errors were corrected for strata and primary sampling units. Confidence intervals and individual coefficient tests used the t distribution with 52 design degrees of freedom, while the overall association of each sociodemographic characteristic with the outcome was assessed using a joint Wald F test. Results are reported as adjusted relative risk ratios (aRRRs) with design-adjusted 95% confidence intervals. For a particular outcome, the aRRR compares two demographic groups in their relative probability of ranking that outcome rather than freedom from physical suffering first, controlling for the other demographic characteristics in the model.

The six-category model used freedom from physical suffering as the outcome reference, producing five contrasts between a non-reference outcome and the reference outcome. For each outcome contrast, five non-intercept coefficients were estimated: one sex contrast (women versus men), two age contrasts (18–39 and 40–59 years, each versus ≥ 60 years), and two educational contrasts (junior high school or below and college or above, each versus senior high or vocational education). The analysis therefore involved five outcome contrasts multiplied by five demographic contrasts, yielding 25 individual coefficient tests. Each aRRR in Table 4 corresponds to one of these tests; the five intercepts and three joint Wald tests were not included among the 25 tests.

Testing 25 coefficients simultaneously increases the chance of obtaining statistically significant results by chance. We therefore adjusted the 25 p values using the Benjamini–Hochberg procedure with the false discovery rate (FDR) set at 5% [48]. The FDR is the expected proportion of false positives among findings declared significant when the procedure is applied repeatedly; it does not mean that each result has a 5% probability of error or that a fixed proportion of the significant findings in this study must be false. Benjamini–Hochberg-adjusted p values are denoted q, with $q < .05$ indicating statistical significance after correction. The three joint Wald tests and intercepts were not included in the adjustment, and the 95% confidence intervals were not multiplicity-adjusted.

Generative artificial intelligence assistance: During manuscript preparation, the authors used OpenAI ChatGPT for language editing and translation. Generative AI was not used to collect data or generate statistical results. All authors verified the analyses, interpretations, and references and take full responsibility for the accuracy and integrity of the manuscript.

Results

Sample characteristics and overall distribution

Of the 1,604 completed interviews, 1,540 respondents ranked one of the eight listed attributes first and were included in the analysis. After survey weighting, 51.6% were women; 34.7% were aged 18–39 years, 37.0% were aged 40–59 years, and 28.2% were aged ≥ 60 years. Among the 1,539 respondents with classifiable education, 47.2% had college education or above (Table 1). Freedom from physical suffering was most frequently ranked first (51.2%, 95% CI 49.0–53.5), followed by leaving no burden or regrets (20.9%, 95% CI 18.9–23.1); based on the displayed percentages, these two attributes together accounted for 72.1% of first-ranked responses. The other six attributes each accounted for less than 10%: being prepared for one's own death (8.2%), freedom from psychological suffering (7.2%), ideal-quality medical care before death (5.1%), having family present at death (4.9%), dying at a preferred time (1.6%), and dying in a preferred place (0.8%) (Table 2).

Table 1
Characteristics of the analytic sample

Characteristic	Category	Unweighted n	Survey-weighted %
Sex	Men	721	48.4
Sex	Women	819	51.6
Age group	18–39 years	465	34.7
Age group	40–59 years	595	37.0
Age group	≥ 60 years	480	28.2
Education	Junior high or below	355	22.8
Education	Senior high/vocational	441	30.0
Education	College or above	743	47.2

Note: n = 1540. Education percentages are based on n = 1539 because one response was classified as 'other'. Percentages incorporate final calibration weights.

Table 2
Survey-weighted distribution of first-ranked good-death attributes

First-ranked attribute	Unweighted n	Weighted %	95% CI
Freedom from physical suffering	798	51.2	49.0–53.5
Leaving no burden or regrets	313	20.9	18.9–23.1
Being prepared for one's own death	132	8.2	6.9–9.8
Freedom from psychological suffering	108	7.2	5.8–8.8
Ideal-quality medical care before death	83	5.1	4.0–6.3
Having family present at death	71	4.9	3.9–6.2
Dying at a preferred time	22	1.6	1.1–2.5
Dying in a preferred place	13	0.8	0.5–1.5
Note: n = 1540. Values are survey-weighted percentages and 95% confidence intervals.			

Sociodemographic differences

The overall eight-category distribution differed by sex (Rao–Scott $F(5.85, 304.19) = 2.98$, $p = .008$), age ($F(10.93, 568.24) = 3.14$, $p < .001$), and educational attainment ($F(10.61, 551.61) = 3.24$, $p < .001$) (Table 3). Descriptively, freedom from physical suffering was ranked first by 48.3% of men and 54.0% of women, whereas leaving no burden or regrets was ranked first by 24.7% and 17.4%, respectively. Across the 18–39, 40–59, and ≥ 60-year age groups, the proportion ranking freedom from physical suffering first increased from 42.2% to 53.2% and 59.8%, while the proportion ranking leaving no burden or regrets first decreased from 27.5% to 19.7% and 14.4%. Among respondents with junior high school or lower, senior high or vocational, and college or higher education, freedom from physical suffering accounted for 57.8%, 53.7%, and 46.4%, respectively; leaving no burden or regrets accounted for 16.8%, 19.7%, and 23.7%. These category-specific patterns are descriptive because no post hoc tests were conducted.

Table 3
Survey-weighted first-ranked attributes by sociodemographic group

First-ranked attribute	Men	Women	18–39 years	40–59 years	≥ 60 years	Junior high or below	Senior high/vocational	College or above
Freedom from physical suffering	48.3	54.0	42.2	53.2	59.8	57.8	53.7	46.4
Leaving no burden or regrets	24.7	17.4	27.5	19.7	14.4	16.8	19.7	23.7
Being prepared for one's own death	8.3	8.2	8.5	8.3	7.7	5.2	8.0	9.8
Freedom from psychological suffering	8.1	6.3	8.8	6.9	5.5	5.7	5.2	9.1
Ideal-quality medical care before death	3.5	6.5	4.0	5.6	5.7	4.0	5.4	5.4
Having family present at death	4.4	5.4	5.7	4.8	4.1	6.2	5.5	3.9
Dying at a preferred time	1.9	1.3	2.4	1.1	1.3	1.7	2.2	1.2
Dying in a preferred place	0.8	0.9	0.7	0.5	1.5	2.6	0.2	0.4

Note: Values are survey-weighted percentages within groups. Rao–Scott tests compared the full eight-category distributions. Sex and age analyses used n = 1540; education analyses used n = 1539. No category-specific post hoc tests were conducted.

Adjusted associations

The six-category multinomial model included 1,504 respondents. The overall model Wald test was significant, $F(25, 52) = 6.55$, $p < .001$. Joint Wald tests were also significant for sex, $F(5, 52) = 5.07$, $p < .001$; age, $F(10, 52) = 3.51$, $p = .001$; and education, $F(10, 52) = 4.04$, $p < .001$ (Table 4). These omnibus tests indicate association with the outcome distribution but do not imply that every category-specific contrast was significant.

After Benjamini–Hochberg correction, two of the 25 individual coefficients had $q < .05$. Adults aged 18–39 years were more likely than those aged ≥ 60 years to rank leaving no burden or regrets rather than

freedom from physical suffering first (aRRR = 2.53, 95% CI 1.66–3.86, p < .001, q = .0012). Women were less likely than men to make the same relative choice (aRRR = 0.65, 95% CI 0.51–0.84, p = .001, q = .0153). The remaining 23 comparisons were not significant after correction.

Table 4
Adjusted associations between sociodemographic characteristics and first-ranked attributes

Characteristic	Leaving no burden or regrets	Prepared for death	No psychological suffering	Ideal-quality medical care	Family present	Joint Wald F (df); p
Sex						5.07 (5, 52); <.001
Men (reference)						
Women	0.65 (0.51–0.84)†	0.91 (0.58–1.44)	0.70 (0.48–1.04)	1.71 (1.06–2.78)	1.11 (0.68–1.83)	
Age group						3.51 (10, 52); .001
≥ 60 years (reference)						
18–39 years	2.53 (1.66–3.86)†	1.06 (0.62–1.81)	1.80 (0.91–3.55)	0.75 (0.40–1.42)	3.11 (1.37–7.06)	
40–59 years	1.51 (1.05–2.17)	0.94 (0.54–1.65)	1.28 (0.70–2.33)	0.90 (0.49–1.66)	1.70 (0.79–3.64)	
Education						4.04 (10, 52); <.001
Senior high/vocational (reference)						
Junior high or below	1.12 (0.75–1.67)	0.60 (0.32–1.14)	1.27 (0.56–2.91)	0.61 (0.31–1.18)	1.47 (0.70–3.09)	
College or above	1.18 (0.87–1.61)	1.40 (0.88–2.22)	1.83 (1.11–3.01)	1.21 (0.72–2.01)	0.66 (0.34–1.28)	

Note: Values are aRRRs (95% CIs). The model simultaneously adjusted for sex, age, and educational attainment; freedom from physical suffering was the reference outcome. The 25 aRRRs were obtained by comparing each of five non-reference outcomes with the reference outcome across one sex, two age, and two educational contrasts (5 × 5 = 25 non-intercept coefficients). † q < .05 after Benjamini–Hochberg correction; 95% CIs were not multiplicity-adjusted.

Discussion

Principal findings

This study used survey-weighted data from the nationally representative probability sample of the 2021 Taiwan Social Change Survey to estimate Taiwanese adults' first-ranked preferences when choosing among the same set of good-death attributes. When required to identify the foremost consideration from eight options, 51.2% of respondents ranked freedom from physical suffering first, while 20.9% selected leaving no burden or regrets after death. Together, these two attributes accounted for 72.1% of all first-ranked choices. This concentration is broadly consistent with international evidence. Seriously ill patients commonly regard pain and symptom relief as fundamental to high-quality end-of-life care, and studies requiring respondents to prioritise good-death attributes have frequently placed pain and symptom control among the highest-ranked considerations [1]. At the same time, reviews of international research show that a good death remains a complex, multidimensional construct. Meier et al., for example, identified 11 thematic domains, including the dying process, freedom from pain, emotional and spiritual well-being, life completion, dignity, family relationships, and quality of care [49].

From a measurement perspective, rating each attribute separately may allow respondents to assign high importance to several attributes without confronting difficult trade-offs. Ranking tasks, by contrast, reveal relative priorities under constrained choice. The present findings therefore indicate that when adults in Taiwan were required to select a single foremost consideration from several important attributes, freedom from physical suffering was most often given priority. This pattern highlights the salience of physical comfort when individuals must make an explicit trade-off among competing considerations for a good death.

The second most frequently selected attribute, leaving no burden or regrets after death, encompasses two related yet conceptually distinct concerns. In Taiwanese clinical contexts, individuals considering palliative care often weigh the relief of treatment-related physical suffering, the avoidance of additional burdens on their families or society, and the reduction of non-beneficial medical interventions [50]. In the Dignity Model developed by Chochinov et al., perceived burdensomeness is explicitly identified as a major factor that can threaten the dignity of patients approaching the end of life [54]. The experience of feeling like a burden is closely associated with diminished dignity, heightened suffering, and end-of-life decision-making [52]. It extends beyond an assessment of the objective demands of caregiving. Patients may worry that their needs will impose physical, social, or emotional difficulties on family members. When illness prevents them from maintaining previously reciprocal relationships with caregivers, they may experience guilt and a diminished sense of self-worth [53]. Caregivers' regrets following a patient's death, meanwhile, often arise from reflection on whether appropriate medical decisions were made, whether caregiving responsibilities were adequately fulfilled, and whether the patient received comfortable end-of-life care [51].

Taken together, the compound attribute of leaving no burden or regrets after death encompasses multiple psychosocial concerns, including family burden, relational responsibilities, caregivers' peace of mind, and the completion of unfinished personal matters. Our findings indicate that this attribute is an

important consideration for a good death among adults in Taiwan. However, because of the wording of the survey item, we could not determine whether respondents were primarily concerned with reducing burden, avoiding or resolving regret, or both.

In the trade-off context used in this study, dying in a preferred place and dying at a preferred time were rarely ranked first. This finding may partly reflect the measurement approach. When people are asked directly about their preferred place of death, their preferences are often clear. A cross-national survey conducted in seven European countries found that, when presented with a hypothetical scenario of advanced cancer and asked directly where they would prefer to die, 51%–84% of respondents across countries chose home [55]. A systematic review of 210 studies similarly found that respondents in most studies expressed a preference for dying at home [56].

Preferences for place of death are not necessarily stable. Longitudinal studies indicate that approximately one fifth of patients change their preferred place of death over the course of illness, although the extent of change varies substantially across studies [56]. Moreover, the observed agreement between preferred and actual place of death can be influenced by the timing of preference assessment, question wording, and the way places of death are classified [57]. The present findings therefore indicate only that when place and timing of death were considered alongside six other good-death attributes in a forced-ranking task, they were less likely to be selected as the foremost consideration.

Demographic Differences and Age-Related Patterns in First-Ranked Good-Death Attributes

Although first-ranked responses were highly concentrated in two of the eight good-death attributes, the overall distribution differed significantly by sex, age, and educational attainment. The age-related pattern was particularly evident. The proportion ranking freedom from physical suffering first increased from 42.2% among adults aged 18–39 years to 59.8% among those aged 60 years or older. Conversely, the proportion ranking leaving no burden or regrets after death first declined from 27.5% among younger adults to 14.4% among older adults.

This pattern differs somewhat from that reported in a European study by Bausewein et al. Using a hypothetical advanced-cancer scenario, that study asked members of the general public to select their two greatest concerns from nine symptoms or care-related issues. It presented being a burden to others as a separate option and found that adults aged 70 years or older were more likely to include it among their two principal concerns [58]. In the present study, burden and regret were combined into a single compound attribute, and the analysis focused exclusively on the first-ranked choice. The two studies therefore differ substantially in item construction, measurement context, and outcome definition. Further research is needed to clarify how understandings and priorities concerning a good death vary across age groups.

Descriptive findings showed that women were more likely than men to rank freedom from physical suffering first, whereas men more often prioritised leaving no burden or regrets after death. The proportion selecting freedom from physical suffering as the foremost consideration also decreased with increasing educational attainment.

Relevant Taiwanese studies provide useful points of comparison. One study of advance healthcare decisions examined the general public's willingness to forgo specific life-sustaining treatments across several clinical scenarios. Age, sex, and educational attainment were significantly associated with treatment preferences in some scenarios; for example, older adults, women, and respondents with higher educational attainment showed greater willingness to forgo life-sustaining treatment under certain conditions [59]. Another study using data from the Taiwan Social Change Survey examined willingness to complete an advance decision. It found that older age, being married, having no responsibility for dependent children, and awareness of the Patient Right to Autonomy Act were associated with greater willingness to complete an advance decision. Health literacy and a value orientation favouring individual autonomy were also important factors [60]. Considered alongside the present findings, these studies suggest that associations between demographic characteristics and end-of-life attitudes depend on the issue being assessed, the decision-making context, and the format of the response options.

Multivariable-Adjusted Associations

In the multinomial logistic regression model, 25 individual coefficient tests were conducted. These comprised comparisons of each of the five non-reference good-death outcomes in the six-category model across five demographic contrasts: one for sex, two for age, and two for educational attainment ($5 \times 5 = 25$). The omnibus Wald test assessed whether a given demographic characteristic was associated with the overall distribution of the six first-ranked good-death attributes. By contrast, each individual coefficient test assessed whether a specific demographic group differed in its relative likelihood of selecting a particular good-death attribute rather than the reference outcome, freedom from physical suffering. Because these tests address different statistical hypotheses and research questions, significant omnibus Wald tests for sex, age, and educational attainment do not imply that all 25 individual comparisons were statistically significant.

To address the risk of false-positive findings across multiple comparisons, we applied the Benjamini–Hochberg procedure to control the false discovery rate (FDR). After adjustment, only two of the 25 individual comparisons remained statistically significant ($q < .05$), both involving the relative choice of leaving no burden or regrets after death rather than freedom from physical suffering. Compared with adults aged 60 years or older, those aged 18–39 years were more likely to select leaving no burden or regrets rather than freedom from physical suffering (aRRR = 2.53, 95% CI 1.66–3.86, $q = .0012$). Women were less likely than men to make the same relative choice (aRRR = 0.65, 95% CI 0.51–0.84, $q = .0153$).

These findings indicate that, after mutual adjustment for demographic characteristics and correction for multiple testing, demographic variation was concentrated in the relative trade-off between two principal

considerations—freedom from physical suffering and leaving no burden or regrets—rather than distributed across all good-death attributes and population groups.

The adjusted age and sex differences may be interpreted within the broader relational context in which personal autonomy and family involvement in end-of-life decision-making are closely intertwined [36]. Evidence from Taiwan suggests a dual orientation: individuals may strongly endorse advance decisions as an expression of personal autonomy while also preferring family members to participate in, or when necessary implement, medical decisions on their behalf [40]. International research similarly indicates that family involvement can have both supportive and challenging consequences. Family members may provide essential emotional support and share practical caregiving responsibilities, yet differences between patients' and relatives' preferences or ambiguity concerning decision-making responsibilities may also generate communication difficulties and conflict [37].

In clinical practice, the sociodemographic differences identified in this study may serve as useful prompts for initiating individualised advance care planning and values-clarification discussions. They should be explored through direct communication with each patient rather than treated as assumptions about individual preferences.

Contributions and Implications

Using data from a national probability sample and incorporating survey weights, this study provides population-level estimates of the proportions of adults in Taiwan who ranked each good-death attribute first and clarifies how these choices were associated with sex, age, and educational attainment. Whereas qualitative research has primarily examined the experiences of patients, caregivers, or healthcare professionals, this study contributes national quantitative evidence from community-dwelling adults. The findings may serve as a Taiwanese reference point for future comparisons across time, population groups, and countries.

Conceptually, the study distinguishes between rating the importance of an individual good-death attribute and identifying the foremost consideration when several important attributes must be weighed against one another. Item-by-item ratings indicate the importance assigned to each attribute, whereas ranking tasks measure relative priority; these approaches therefore address different research questions. The findings show that first-ranked considerations among adults in Taiwan were concentrated in freedom from physical suffering, followed by a relational concern involving burden and regret. Methodologically, the descriptive analysis retained all eight original response options to represent the observed response distribution. Because two options had very small numbers of responses, the multivariable model was explicitly restricted to six categories, thereby avoiding the arbitrary combination of conceptually distinct preferences concerning place and timing of death. The analyses also accounted for the complex survey design and applied the Benjamini–Hochberg false-discovery-rate correction to 25 individual coefficient tests. This approach clarified the scope of each estimate and reduced the risk of overinterpreting chance findings arising from multiple comparisons.

The findings may help healthcare professionals conduct more specific discussions about values at the end of life. Such conversations can invite patients to explain the forms of suffering they most wish to avoid, the functions and relationships they hope to preserve, the treatment burdens they consider acceptable, their concerns about family members, any unfinished matters, and how they want their families to participate in decision-making. These discussions may support care decisions that more closely reflect each patient's values and priorities.

Limitations and Future Research

This study has several limitations. First, its cross-sectional design precludes causal inference regarding the relationships between demographic characteristics and first-ranked good-death attributes. Respondents were community-dwelling adults who completed a hypothetical ranking task at a single time point. Their responses may differ from the choices they would make during serious illness or when facing actual treatment decisions, and the data cannot show whether preferences change with illness progression or over time. The analysis was also limited to the first-ranked response. It therefore does not represent the complete ordering of the eight attributes or use respondents' second-ranked choices to identify secondary priorities.

Second, the eight response options were not equivalent in conceptual breadth. Freedom from physical suffering refers to a relatively specific physical experience, whereas leaving no burden or regrets after death combines burden on others with unfinished personal concerns. Broader or compound options may attract respondents for different reasons; consequently, the observed proportions should not be interpreted as direct comparisons among concepts of equivalent scope. The available survey documentation also does not indicate whether interviewers presented the eight options in varying orders. If all respondents encountered them in a fixed sequence, option position may have affected attention and selection. Because response differences arising from item content and presentation order cannot be excluded, the observed distribution should be interpreted within the context of this particular question design. Comparisons with other studies should first establish that their questions and administration procedures were sufficiently similar [44, 45].

Third, data collection occurred during the COVID-19 pandemic, and the crude completion rate was 36%. Calibration weighting can reduce known differences between the sample composition and the target population, but it cannot fully correct for unobserved differences between participants and non-participants. Nor can the potential influence of pandemic-related perceptions of mortality risk and the broader social context on respondents' answers be excluded [44]. In addition, the original survey did not measure health status, caregiving experience, family interactions, financial pressure, health literacy, religion or spirituality, or previous experience with advance care planning. These omissions limit the extent to which the observed differences by age, sex, and educational attainment can be explained.

Finally, dying in a preferred place and dying at a preferred time had small numbers of responses and were excluded from the adjusted model. The six-category model therefore applies only to the retained outcomes and cannot be generalised to the complete eight-category distribution. The false-discovery-

rate correction reduced the risk of false-positive findings arising from multiple comparisons, but it does not ensure that the observed associations will be reproduced. Given the single cross-sectional design, independent replication remains necessary.

Future research should present burden and regret as separate attributes and use cognitive interviews to examine how respondents of different ages and educational backgrounds interpret each option. Option order should be randomised or systematically rotated to estimate and reduce position effects. Larger samples would permit all eight outcomes to be retained in adjusted models, while joint analysis of first- and second-ranked responses could provide a more complete representation of the priority structure. Longitudinal studies could repeat the assessment as illness, treatment goals, or family circumstances change, examining how survey rankings translate into actual healthcare decisions and whether patients' desired degree of family involvement changes over time. Cross-national comparisons should use identical items or rigorously adapted cross-cultural measures, together with comparable response options, presentation orders, decision contexts, sampling designs, and administration procedures. Such consistency is necessary to distinguish population differences from methodological variation with greater confidence.

Conclusions

Among eight good-death attributes, adults in Taiwan most frequently ranked freedom from physical suffering first, followed by leaving no burden or regrets after death; together, these two attributes accounted for 72.1% of first-ranked responses. The overall eight-category distribution differed by sex, age, and educational attainment. However, after correction for multiple testing, only two of the 25 individual comparisons in the six-category model remained statistically significant—one involving age and the other sex. Both concerned the relative choice of leaving no burden or regrets rather than freedom from physical suffering.

The principal contribution of this study is its survey-weighted estimation of how first-ranked choices were distributed among the Taiwanese adult population covered by the survey when respondents were required to make trade-offs among the same set of good-death attributes. The findings also demonstrate that considering an attribute important and ranking it as the foremost priority are distinct measurement outcomes. Provided that future studies use comparable question wording, response options, ranking procedures, sampling designs, and administration methods, the present findings may serve as a reference for comparing first-ranked good-death preferences across populations.

In clinical practice, healthcare professionals may use physical suffering, family burden, unfinished matters or regrets, psychological comfort, important relationships, and care arrangements as starting points for discussion. Patients can then be asked what they most wish to avoid, which trade-offs they consider acceptable, and how they want family members to participate in decision-making. Because these preferences may change with illness progression, emotional state, understanding of prognosis, and family circumstances, healthcare teams should revisit and confirm them throughout the course of

care. Continuing dialogue can help align treatment and care with each patient's evolving values and priorities for a good death.

List of abbreviations

aRRR, adjusted relative risk ratio; CI, confidence interval; FDR, false discovery rate; SRDA, Survey Research Data Archive; TSCS, Taiwan Social Change Survey.

Declarations

Ethics approval and consent to participate

According to the dataset documentation and original survey records, the original TSCS obtained informed consent from participants and was approved by the Institutional Review Board for Humanities & Social Science Research, Academia Sinica (AS-IRB-HS 19034 v.6). The present study used de-identified secondary data under SRDA application and data-use requirements and involved no new participant recruitment, contact, or intervention.

Consent for publication

Not applicable. The manuscript contains no identifiable individual-level information.

Availability of data and materials

The de-identified dataset analysed in this study is available from the Survey Research Data Archive, Academia Sinica, subject to its registration, application, and data-use requirements: 2021 Taiwan Social Change Survey (Round 8, Year 2): Health (C00390_2), https://doi.org/10.6141/TW-SRDA-C00390_2-1 [43].

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

YCC contributed to the study conception, data curation, original drafting, and manuscript revision. JPL contributed to the study conception, verification of the data source, supervision, and manuscript revision. SWC contributed to the study design, complex survey analysis, interpretation of the results, and manuscript revision. All authors read and approved the final manuscript.

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