

Attitudes towards end-of-life issues in disorders of consciousness: a European survey

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Abstract Previous European surveys showed the support of healthcare professionals for treatment withdrawal [i.e., artificial nutrition and hydration (ANH) in chronic vegetative state (VS) patients]. The recent definition of minimally conscious state (MCS), and possibly research advances (e.g., functional neuroimaging), may have led to uncertainty regarding potential residual perception and may have influenced opinions of healthcare professionals. The aim of the study was to update the end-of-life attitudes towards VS and to determine the end-of-life attitudes towards MCS. A 16-item questionnaire related to consciousness, pain and end-of-life issues in chronic (i.e., >1 year) VS and MCS and locked-in syndrome was distributed among attendants of medical and scientific conferences around Europe ($n = 59$). During a lecture, the items were explained orally to the attendants who needed to provide written yes/no responses. Chi-square tests and logistic regression analyses identified differences and associations for age, European region, religiosity, profession, and gender. We here report data on items concerning end-of-life issues on chronic VS and MCS. Responses were collected from 2,475 participants. For chronic VS (>1 year), 66% of healthcare professionals agreed to withdraw treatment and 82% wished not to be kept alive

($P < 0.001$). For chronic MCS (>1 year), less attendants agreed to withdraw treatment (28%, $P < 0.001$) and wished not to be kept alive (67%, $P < 0.001$). MCS was considered worse than VS for the patients in 54% and for their families in 42% of the sample. Respondents' opinions were associated with geographic region and religiosity. Our data show that end-of-life opinions differ for VS as compared to MCS. The introduction of the diagnostic criteria for MCS has not substantially changed the opinions on end-of-life issues on permanent VS. Additionally, the existing legal ambiguity around MCS may have influenced the audience to draw a line between expressing preferences for self versus others, by implicitly recognizing that the latter could be a step on the slippery slope to legalize euthanasia. Given the observed individual variability, we stress the importance of advance directives and identification of proxies when discussing end-of-life issues in patients with disorders of consciousness.

Keywords Ethics · Vegetative state · Minimally conscious state · Euthanasia · End-of-life · Survey

Introduction

Technological developments in the intensive care led to the survival of severely brain-damaged patients who, until that time, would have died almost instantly from apnea. These patients survive in states of disordered consciousness ranging from coma, vegetative state (VS) and minimally conscious state (MCS). Patients in coma lie with their eyes closed, show no awareness of themselves and their surroundings, and never open their eyes even when intensively stimulated [1]. Patients in VS regain phenomenal sleep-wake cycles but their motor, auditory, and visual functions

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are restricted to mere reflexes [2]. Patients in MCS manifest fluctuating signs of purposeful behavior, may follow simple commands, show gestural or verbal yes/no responses regardless of accuracy, and/or may verbalize intelligibly [3]. In some cases, patients' cognitive abilities are preserved but are not evident due to limited motor capacities, such as quadriplegia or quadriparesis. Such patients are considered to be locked-in [4], and are not among patients with disorders of consciousness although they can be mistaken for unconsciousness [5, 6]. Prolonged survival in these profound unconscious states has been raising medical, ethical, and public policy controversies mainly stemming from how different people regard indefinite survival in such states [7]. By means of a wide European survey among healthcare professionals, we here aimed at updating the end-of-life attitudes towards the VS and determining for the first time in a consistent way the attitudes towards MCS.

Methods

A questionnaire was distributed during lectures at medical and scientific conferences and meetings ($n = 59$) within Europe (data were collected between September 2007 and October 2009). To ensure comparability of responses, participants were first introduced to the clinical definitions of disorders of consciousness and were then asked to provide 'yes' or 'no' answers to 16 questions related to consciousness, chronic VS (i.e., >1 year), chronic MCS (i.e., >1 year) and locked-in syndrome (LIS). We here report the replies obtained in European medical and paramedical professionals to the questions: 'Being in a chronic VS is worse than death for the patient/for the family'; 'Being in a chronic MCS is worse than being in a VS for the patient/for the family'; 'Do you think that it is acceptable to stop treatment (i.e., artificial nutrition and hydration-ANH) in patients in chronic VS?'; 'Do you think that treatment can be stopped in patients in chronic MCS?'; 'Would you like to be kept alive if you were in a chronic VS?'; 'Would you like to be kept alive if you were in a chronic MCS?'. The remaining 10 questions related to consciousness [8] and pain [9] have been reported before. Demographic data including age, gender, nationality, profession, and religious beliefs were recorded. Religiosity was defined as the belief in a personal god belonging to an institutionalized religion (i.e., Christianity, Islam, Judaism) independently of practicing. Nationalities were categorized into three geographic regions based on previous classification criteria [10]: Northern (Denmark, Estonia, Finland, Lithuania, Netherlands, Norway, Poland, Russia, Sweden, UK), Central (Austria, Belgium, Czech Republic, Germany, Hungary, Luxembourg, Moldavia, Romania, Serbia, Slovakia, Slovenia, Switzerland), and Southern Europe (Bulgaria,

Croatia, Cyprus, France, Greece, Italy, Portugal, Spain, Turkey, the former Yugoslav Republic of Macedonia). Statistical analyses were performed using SPSS v.16.0 software package. Chi-square tests assessed differences within and between categorical variables. Multiple logistic regressions (enter method) were used to examine and test the associations of the odds for agreement with the questions with five predictor variables (age, profession, European region, religiosity, and gender). Results were considered significant at $P < 0.05$ (two-sided). The study was approved by the ethics committee of the University of Liège. Completion of the questionnaire was voluntary, anonymous, and considered as consent for participation in the survey.

Results

The study sample included 2,475 medical and paramedical professionals coming from 32 European countries (see Table 1 for demographic data). The attitudes towards end-of-life statements for VS and MCS as expressed by the whole sample are summarized in Fig. 1. Respondents more often wished not to be kept alive themselves as compared to accepting to let others die in VS ($P < 0.001$) and MCS ($P < 0.001$) and this dissociation was more important for MCS as compared to VS (interaction analysis; $P < 0.001$). Participants' end-of-life attitudes towards VS and MCS differed based on the three geographic regions (Fig. 2) and religiosity, professional background and gender (Table 2).

Table 1 Demographic characteristics of the studied sample ($n = 2,475$)

Age (years), mean \pm SD (range)	39 \pm 14 (18–88)
Gender, no. (%)	
Women	1,314 (53%)
Men	1,098 (44%)
Missing data	63 (3%)
Respondents by European Region, no (%)	
Northern	402 (16%)
Central	1,213 (49%)
South	855 (35%)
Missing data	5 (0%)
Profession, no. (%)	
Medical professionals	1,608 (65%)
Paramedical professionals	651 (26%)
Missing data	216 (9%)
Religiosity, no. (%)	
Religious respondents	1,407 (57%)
Non-religious respondents	1,004 (40%)
Missing data	64 (3%)

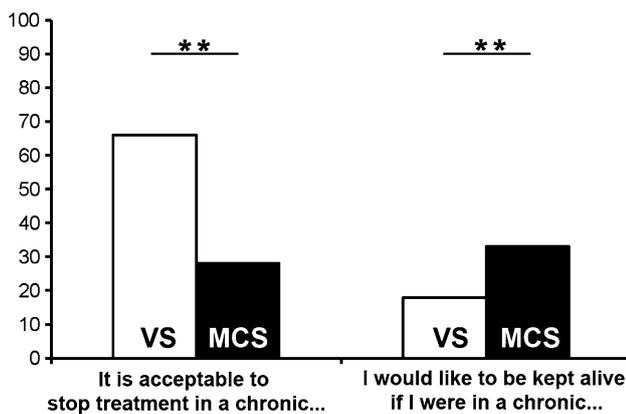


Fig. 1 End-of-life attitudes towards the vegetative state (VS) and minimally conscious states (MCS) as expressed by 2,475 medical and paramedical professionals. Bars represent % agreement (** $P < 0.001$)

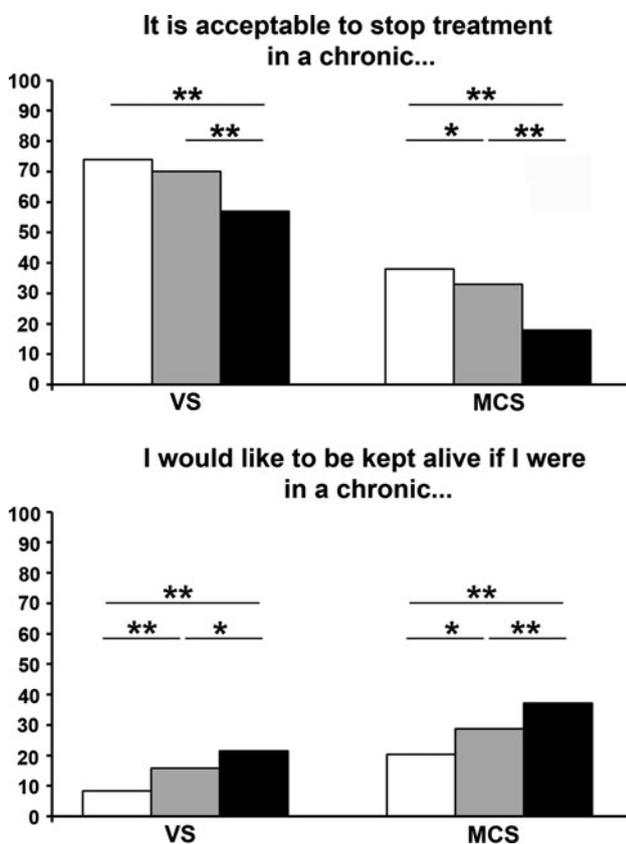


Fig. 2 End-of-life attitudes towards the vegetative state (VS) and minimally conscious states (MCS) depending on geographic region. Bars represent % agreement (white: Northern, grey: Central, black: Southern Europe; * $P < 0.05$, ** $P < 0.001$)

Multiple logistic regression analysis showed that agreement with these questions was mainly associated with geographic region and respondents' religiosity (Table 3).

Chronic MCS was considered worse than VS more so from the perspective of the patient (54%) as compared to

that of the family (42%; $P < 0.001$). Inversely, respondents found that chronic VS is worse than death more so from the perspective of the family (80%) as compared to that of the patient (55%; $P < 0.001$).

Discussion

Our attempt to open a discussion on treatment withdrawal from patients with chronic disorders of consciousness (VS, MCS) is not an easy one. We here surveyed end-of-life attitudes of European medical and paramedical professionals ($n = 2,475$) towards VS [now called 'unresponsive wakefulness syndrome', 11] and determined, for the first time, attitudes towards the recently defined entity of MCS [3]. Concerning chronic VS (i.e., lasting more than one year and, hence, considered as permanent), two-thirds of the surveyed participants reported that it was acceptable to withdraw ANH from these patients and most (82%) preferred not to be kept alive if they imagined themselves in this condition. These results are in line with surveys from previous decades, where the majority of physicians, despite different cultural background, would generally support ANH withdrawal from VS patients and would not wish life-sustaining treatments for themselves (Table 4). Here, although agreement with withdrawal of treatment was somewhat less as compared to historical data, possibly due to different adopted research methodologies, the surveyed sample expressed similar end-of-life attitudes towards permanent VS despite the recent introduction of the diagnostic criteria for MCS [12], the recent confirmation of potential diagnostic error in VS patients [12], the apparent evidence for residual cognitive processing coming from functional neuroimaging technologies [13, 14] and the potential prognostic value of the latter [15].

Concerning chronic MCS, there were clear differences in opinions as compared to permanent VS: although almost 70% would not wish to be kept alive in this state, recognizing it to be worse than VS, less than one-third of our respondents supported treatment withdrawal from these patients. Such differences in attitudes between VS and MCS are comparable to a previous survey, where 92% of British physicians considered it appropriate to withdraw ANH from patients for whom the predicted outcome was VS and only 22% would think so for patients who were able to communicate simple needs without the capacity for speech production [16]. Our data are opposed to the proposed view that the distinction between MCS and VS is artificial and unneeded [17]. We illustrated that most healthcare professionals hold different views on end-of-life issues for VS as compared to MCS. Similarly, outcome studies [18–20] and neuroimaging studies [21] have stressed the importance to disentangle both clinical entities.

Table 2 End-of-life attitudes towards vegetative (VS) and minimally conscious states (MCS) depending on professional background, religiosity and gender

Question	Type of profession		Religiosity		Gender	
	Medical professionals	Paramedical professionals	Religious respondents	Non-religious respondents	Men	Women
It is acceptable to stop treatment in						
... chronic VS	1,053 (67%)	433 (67%)	844 (61%)	729 (74%)**	739 (68%)	836 (65%)
... chronic MCS	429 (27%)	215 (33%)*	308 (22%)	363 (37%)**	307 (28%)	371 (29%)
I would like to be kept alive if I were in						
... chronic VS	295 (19%)	79 (12%)**	318 (23%)	107 (11%)**	217 (20%)	206 (16%)*
... chronic MCS	552 (35%)	157 (24%)**	570 (41%)	217 (22%)**	383 (35%)	399 (31%)*

VS vegetative state, MCS minimally conscious state

* $P < 0.05$, ** $P < 0.001$

Table 3 Logistic regression of agreement vs. disagreement with the four end-of-life related questions on participants’ predictor variables

Predictor variable	It is acceptable to stop treatment in chronic VS Odds ratio (95% CI)	It is acceptable to stop treatment in chronic MCS Odds ratio (95% CI)	I would like to be kept alive if I were in chronic VS Odds ratio (95% CI)	I would like to be kept alive if I were in chronic MCS Odds ratio (95% CI)
Age ^a	0.98 (0.97–0.99)**	0.98 (0.98–0.99)**	1.01 (1.01–1.02)*	1.00 (0.99–1.01)
Women	0.79 (0.64–0.97)*	0.91 (0.73–1.13)	0.87 (0.67–1.12)	0.92 (0.75–1.13)
Southern Europe	1	1	1	1
Northern Europe	3.36 (2.38–4.74)**	3.82 (2.79–5.23)**	0.34 (0.21–0.55)**	0.47 (0.34–0.66)**
Central Europe	1.84 (1.49–2.26)**	2.24 (1.77–2.83)**	0.72 (0.56–0.92)*	0.69 (0.56–0.85)**
Medical professionals	1.18 (0.94–1.49)	0.91 (0.73–1.15)	1.18 (0.88–1.59)	1.28 (1.02–1.62)*
Religious respondents	0.45 (0.37–0.55)**	0.46 (0.37–0.55)**	2.20 (1.70–2.85)**	2.24 (1.84–2.73)**

Predicted response: ‘agreement’. An odds ratio higher than 1 signifies more agreement with the statement, whereas an odds ratio less than 1 notifies less agreement

VS vegetative state, MCS minimally conscious state

* $P < 0.05$, ** $P < 0.001$

^a For continuous variables, the odds ratio equals the relative change in the odds ratio when the variable is increased by one unit

Additionally, the distinction between personal preferences with private consequences (i.e., ‘I would like to be kept alive if I were...’) and more objective statements of societal significance (i.e., ‘It is acceptable to stop treatment in...’) are in accordance with previous findings showing that the majority of surveyed physicians and nurses would refuse treatment for themselves more than for patients [22]. The legal ambiguity which exists around MCS may have influenced the audience to draw a virtual line between expressing preferences for self versus others, by implicitly recognizing that the latter could be a step on the slippery slope to legalize killing [23], a controversial issue around Europe judging from the legislation diversities among European countries [24].

We empirically showed that the majority of our sample (80%) considered chronic VS worse than death and that this was more relevant for the patient’s family. It should be

noted that this is an emotionally loaded statement which could influence subsequent answers. In principle, we are unable to account with certainty for the sample’s responses, especially in the case of MCS where opinions appeared more dissociated. Such results may be due to the different outcome which characterizes VS and MCS [25], or the potential pain perception that the sample ascribes to MCS [9], or the distinct brain activation patterns of these two clinical entities [26]. We preferred, though, to use the present formulation of questioning so as to evaluate in a comparable way our data with past surveys’ results [e.g., 22, 27; also Table 4]. Likewise, in order to permit comparisons between items, MCS and LIS questions were formulated in a similar manner as those for VS. The present survey setup (i.e., on the spot data collection as opposed to mailing questionnaires) allowed the audience to ask for clarifications when an item was not well

Table 4 Past surveys on end-of-life attitudes

Statement	Audience (<i>n</i>)	Agreement (%)	References
Withdrawal of ANH from patients who will remain in a VS is ethically justified	Physicians (208)	94	[49]
Withdrawal of ANH from patients who will remain in a VS is ethically justified	Physicians (1,027)	94	[37]
It is ethical to withhold or withdraw ANH from PVS patients	Neurologists (169)/Medical directors (150)	88/89	[50]
I am in favour of withdrawing feeding tube from a PVS patient	Internists (326)	80	[51]
I would desire ANH if I were in a PVS	Neurologists (169)/Medical directors (150)	10/13	[50]
I do not wish to be treated if I were in a PVS	Physicians (115)/Nurses (127)	90/89	[22]
I would refuse artificial feeding if I were permanently comatose	Physicians (345)	92	[52]

ANH artificial nutrition and hydration, VS vegetative state, PVS permanent vegetative state

understood. We also document that significantly more physicians prefer to be kept alive if in chronic MCS as compared to paramedical professionals (Table 2). The reasons for these differences remain speculative and beyond the scope of the present study. Future studies should tackle the importance of the nature of the respondents on end-of-life issues and possible differences between medical caregivers and the general public. Given the observed individual variability in these emotionally highly charged matters we stress the need for advance directives and proxy identification, acknowledging their known limitations such as vague or misleading statements of wishes [28], negation of previously expressed wishes when illness is an actual fact [29] and inconsistency in preferences over time [30]. Finally, it is important to stress that the present study assessed opinions of healthcare professionals. Our sample is, hence, not representative of the general public, which might have different (possibly more positive) views on end-of-life issues than medical and paramedical staff.

End-of-life decisions are not always governed by clinical circumstances and patients' preferences; rather, physicians' characteristics (i.e., age, religion and geographic region) seem to play a critical role for picking such options [31, 32]. In our study, geographic differences as well as religious background were the variables that consistently predicted all four end-of-life statements. Residents from Northern and Central Europe, as compared to Southern Europeans, were more likely to agree with ANH withdrawal in chronic VS whereas religious respondents, older respondents, and women were less likely to find it acceptable. Physicians in Southern Europe have been reported to hold more paternalistic views on medical practice and the presumption to continue to treat is usual [7]. Considering these different attitudes within and out of

Europe, it has been suggested that an international consensus regarding standards of care for patients with disorders of consciousness needs to be reached [33]. Additionally, religious affiliation was previously shown to influence the decisions of European intensivists to withdraw treatment [10].

The majority of our sample (80%) considered chronic VS worse than death especially from the family's point of view. In the past, Jennett [27] similarly reported that nearly 90% regarded vegetative survival worse than death, a few commenting that the question was irrelevant for the patient, whereas 95% would consider that the families would regard it worse. Indeed, it was previously shown that families of long-hospitalized VS patients are confronted with an emotional paradox as they cannot adopt a strategy of mourning because their patients are not dead [34]. More recently, it was shown that VS patients' families have been characterized by emotional distress increasing with duration of the disorder, have unsatisfactory family relationships, adopt situation-oriented coping strategies (i.e., efforts aimed at solving and cognitively restructuring the problem or attempting to change the situation), and thoughts of the imminent death of their beloved ones were associated with anxiety and depressive symptoms [35]. Despite these figures, although most families of VS patients were shown to be in favour of interventions for acute complications (e.g., antibiotics), the majority (76%) did not wish their relative to receive cardiopulmonary resuscitation or mechanical ventilation in case needed [36].

It is important to stress that our survey showed differences in opinions on VS and the recently defined MCS [3]. MCS patients are characterized by minimal fluctuating awareness with possible perception of suffering [9, 21], whereas VS patients, by definition, are deprived of such experiences [19]. Similarly, we observed that medical

caregivers agreed less to stop treatment in MCS as compared to VS. A previous survey showed that British doctors were more reluctant not to treat or withdraw ANH as the predicted degree of patients' awareness and interaction with the environment increased [37]. It, hence, seems that participants may have considered consciousness as a criterion for making treatment limitation decisions. However, the significance of consciousness as a criterion to withhold treatment has been criticized on the grounds that it may not always be in the patient's best interest to keep on living in a state which may be considered worse than VS; thus, running the risk of acting against the ethical principle of patients' autonomy [38, 39]. In cases of non-communicating patients, like VS and MCS, patients' opinions cannot be obtained, except in the few cases where patients had made advance directives or had indicated an informed surrogate decision maker. However, although advanced directives continue to be widely used in clinical practice [40], one should also consider the empirical fact that the formerly competent person's critical interests do not necessarily reflect her/his experiential interests after incompetency is established irreversibly [29, 41]. Additionally, the literature on traumatic paraplegia and quadriplegia [42] as well as on patients with amyotrophic lateral sclerosis [43] shows that once patients have become accommodated to this state of reduced function, they generally rate their quality of life as satisfactory and are glad to be alive. In cases of legal representation, the proxy decision maker should mediate trying to maximize patients' self-determination and protect their interests on the principles of beneficence (i.e., decisions should be made on patient's best interests and benefits should outweigh the burdens of treatment) and non-maleficence [i.e., ongoing treatment may be judged to be futile on the basis of low likelihood of significant recovery, 44]. Even though for VS patients end-of-life provisions have been introduced [45], for MCS no ethical or legal consensus about withdrawing life support has been formulated [46] and no distributive justice and resource allocation for these patients have yet been determined. Hence, it remains a bioethical debate as to whether and how treatment limitations should be applied for MCS patients [47].

In conclusion, the introduction of diagnostic criteria of MCS in 2002 [3] seems not to substantially change European caregivers' opinions on end-of-life issues on permanent VS. Most of the surveyed participants do not wish to live in this condition and consider it acceptable to stop ANH, even if the observed frequency of agreement seems to be lower as compared to historical data. As for previous surveys, opinions differed between Northern, Central, and Southern European countries and were mostly explained by religious beliefs. For the recently defined MCS, there seems to be a strong dissociation between what we want for

ourselves (most caregivers do not wish to be kept alive in this condition) and what we consider acceptable in patients (only a minority considered it acceptable to stop treatment in chronic MCS). Our observation that opinions on treatment withdrawal and personal treatment wishes differ in VS as compared to MCS, stresses the importance to distinguish both clinical entities when preparing advanced directives and discussing personal preferences with proxies. Indeed, 20% of respondents who did not wish to be kept alive if they were themselves VS they preferred to be kept alive if they were in MCS. At present, templates for written instructional directives do not make the difference between vegetative and non-communicative albeit minimally conscious states. Additionally, the finding that healthcare professionals' views are dependent on geographic and religious variables makes the formulation of universal legal and ethical guidelines a challenging task [48]. Despite the prevalent support for the right to die in chronic VS, the observed diversity and complexity around MCS makes us propose to increase efforts promoting advance directives and identification of proxies in tackling the ethical and legal challenges surrounding end-of-life issues in DOC.

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