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Nurses' self-efficacy, rather than their knowledge, is associated with their engagement in advance care planning in nursing homes: A survey study

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Abstract

Background: Considering social cognitive theory and current literature about successful advance care planning in nursing homes, sufficient knowledge and self-efficacy are important preconditions for staff to be able to carry out advance care planning in practice.
Aim: Exploring to what extent nurses' knowledge about and self-efficacy is associated with their engagement in advance care planning in nursing homes.
Design: Survey study as part of a baseline measurement of a randomised controlled cluster trial (NCT03521206).
Setting/participants: Nurses in a purposive sample of 14 nursing homes in Belgium.
Methods: A survey was distributed among nurses, evaluating knowledge (11 true/false items), self-efficacy (12 roles and tasks on 10-point Likert-type scale) and six advance care planning practices (yes/no), ranging from performing advance care planning conversations to completing advance directives.
Results: A total of 196 nurses participated (66% response rate). While knowledge was not significantly associated with advance care planning practices, self-efficacy was. One unit's increase in self-efficacy was statistically associated with an estimated 32% increase in the number of practices having carried out.
Conclusions: Nurses' engagement in advance care planning practices is mainly associated with their self-efficacy rather than their knowledge. Further research is necessary to improve the evidence regarding the causal relationship between constructs. However, these results suggest that educational programmes that focus solely on knowledge might not lead to increasing uptake of advance care planning in nurses.

Keywords

Advance care planning, education, knowledge, nurses, nursing homes

What is already known about the topic?

- Limited knowledge about and confidence in performing advance care planning are reported as prominent factors inhibiting healthcare professionals from actually engaging in advance care planning in practice
- Sufficient knowledge and self-efficacy are considered preconditions or necessary intermediate steps for healthcare professionals to be able to engage in advance care planning in nursing homes
- Social cognitive theory poses that knowledge leads to action through self-efficacy

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What this paper adds?

- This study demonstrates that nurses' knowledge regarding advance care planning is not significantly associated with their engagement therein, in nursing homes
- Self-efficacy of nurses was found to be positively associated with the number of advance care planning practices they carried out

Implications for practice, theory or policy

- Educational programmes are encouraged to not only focus on improving knowledge but also on increasing self-efficacy regarding advance care planning
- Future research is warranted to add to the theory of causality regarding higher self-efficacy leading to more engagement in advance care planning, or vice versa

Background

The voluntary process of advance care planning[1] has been repeatedly voiced as especially valuable for people living in nursing homes.[2] While a wide range of factors can influence healthcare professionals' engagement in advance care planning, having sufficient knowledge and skills have been identified as important intermediate steps towards successful advance care planning.[3,4] However, nursing home staff often initiate advance care planning too late or infrequently.[5,6] It has been found that prominent factors inhibiting them to do so are lack of knowledge and low self-efficacy.[7,8] Social cognitive theory that aims to explain determinants for behaviour proposes that there is a relationship between knowledge and skills, which translates into action by raising self-efficacy to overcome barriers.[9,10] Perceived self-efficacy is someone's belief in his or her own ability to succeed in specific situations or accomplish a task.[10] Based on this theory, we might, for example, hypothesise that nurses who have similar knowledge may still perform differently, depending on fluctuations in self-efficacy.[11] Bandura's[12] theory has been used as a model to evaluate relationships between knowledge, self-efficacy and behaviour in research regarding health promotion, palliative care and recently in research regarding patients' readiness to engage in advance care planning.[13–16]

We know that knowledge about advance care planning is associated with self-efficacy and vice versa.[8,17] However, our understanding whether and to what extent these constructs also relate to professionals' engagement in actual advance care planning practices is incomplete. To date, only a small amount of studies evaluated associations between knowledge *or* self-efficacy and its relation to the amount of conversations carried out.[18,19] The purpose of this exploratory study is to better understand the relationship between nurses' knowledge and self-efficacy with their engagement in advance care planning practices (ranging from advance care planning conversations to completing advance directives and performing advance care planning in people living with dementia) in nursing homes.

Methods

Study design

This cross-sectional survey study is part of a cluster randomised controlled trial (NCT03521206) that aims to evaluate a structured advance care planning implementation programme in nursing homes.[20] As a baseline measure, staff's knowledge, self-efficacy and engagement in advance care planning practices were measured (March to April 2018).

Setting and participants

We purposively recruited 14 nursing homes in Flanders, Belgium. As these are baseline data of a cluster randomised controlled trial, the sample size of 14 nursing homes served to detect an effect size of 0.5 at a significance level of 2.5% and power of 80% on the primary outcome (nursing home care staff's knowledge of and self-efficacy regarding advance care planning). These were eligible if they had at least 100 beds and if the facility manager expressed explicit motivation to participate. Nursing homes were ineligible if they had or were currently taking part in a similar study, if they had an extensive advance care planning policy or if organisational changes were planned. For the recruitment of nursing homes, umbrella organisations in the nursing home sector in Flanders were asked to distribute a short informational form about the project and inclusion criteria among their members. Nursing homes whose management expressed interest in participating were added (on a first come first serve basis) to a list stratified by region, number of beds and facility type (non-profit and for-profit public/private). We then contacted the nursing homes consecutively, starting with the first on the list. After we visited the nursing home,

researchers made an eligibility assessment (using the eligibility criteria). If the nursing home was included, the next on the list was contacted until a sufficient number was reached per stratum. All nurses on staff in each nursing home were invited upon condition that they speak and understand Dutch. Students and interns were excluded.

Data collection

In each nursing home, a contact person was designated to identify all eligible nurses. Surveys were distributed, consistent with regular ways of communicating to staff. Nurses who agreed to participate completed the survey and were asked to post it in a locked box only accessible to the researchers, using an anonymised envelope. Reminders were sent twice (after 2 and 4 weeks).

Instrument

We developed a survey instrument to investigate advance care planning knowledge, self-efficacy and practices. Items were based on existing surveys[21–23] and input from the multidisciplinary research team. The instrument was tested with healthcare professionals that were working or had worked in a nursing home via individual cognitive interviews ($n = 6$)[24] and through distributing a paper version of the survey ($n = 107$). The final survey can be found in the Supplementary Material 1 (original in Dutch language) and 2 (translated by authors into English). Sources and amendments to each of the items are described in Supplementary Material 3. Participant's characteristics included age, gender, years of employment in aged care, educational level, previous education in advance care planning, weekly working hours and average number of residents caring for. Respondents were asked to indicate 'true', 'false' or 'I don't know' for 11 knowledge statements. To assess self-efficacy, nurses had to indicate their confidence regarding 12 advance care planning roles and tasks on a 10-point Likert-type scale, ranging from 'little' (1) to 'a lot of confidence' (10), or 'not applicable'. Respondents were also asked if they had performed any of six listed American College of Physicians (ACP) practices in the past 6 months, 'yes' (1) or 'no' (0).

Statistical analyses

We analysed whether and to what extent knowledge is associated with nurses' involvement in advance care planning practices and whether and to what extent their self-efficacy in advance care planning is associated with these practices. We calculated mean total scores of each of the subscales; ranging from 0 to 1 for knowledge and practices and 0 to 10 for self-efficacy, with higher scores indicating better knowledge, having carried out more practices or higher self-efficacy, respectively. Cases with missing data on $>$25% of items were excluded from this calculation. Strong multicollinearity between covariates (age, gender, years of employment, education, education, weekly working hours and number of residents caring for) was not found. Because of excess zero count data in the total score of advance care planning practices (43%), a Zero-Inflated Poisson model was applied, combining a count model and a logistic zero model,[23] with total advance care planning practices as target variable, and total knowledge and self-efficacy scores as interacting independent variables. We included 'previous education in advance care planning' and 'weekly working hours' as covariates, after forward-backward manual selection. The associations between the advance care planning practices and the covariates listed above were evaluated with Wald tests and verified using the Akaike Information Criterion (AIC). Unless of main theoretical importance (self-efficacy and knowledge), only statistically significant predictors were retained in the model ('weekly working hours' in the count model with Poisson distribution and 'previous education in advance care planning' in the logistic zero model). The applied model showed the lowest AIC (579.24) and therefore best fit. The Wald test results for the knowledge predictor were not statistically significant. A mixed-model was not applied because it showed a near-zero intra-class correlation within nursing homes. Results are statistically significant if $p < 0.05$ on a two-sided test.

Results

A total of 196 nurses participated (66%). The majority were female (90%; Table 1), with a sample mean age of 42 ($\pm$11) years, and were highly educated (21%). However, 64% were not educated in advance care planning. Nurses worked on average 30 h/week and had worked a median of 12 years in the sector. They cared for a median of 20 residents/day.

The mean knowledge score was 0.58 ($\pm$0.15; Table 2), ranging from 0 to 1. The mean self-efficacy score was 6.59 ($\pm$1.78). The mean total score was 0.26 ($\pm$0.31), with scores ranging from 0 to 1; 43% of nurses, however, participated in none of the advance care planning practices. Self-efficacy was significantly associated with practices ($p < 0.001$). Each score increase in self-efficacy increased the expected log count in practice by 1.32 (95% confidence interval (CI): 0.77–2.25; $p < 0.001$), which equals an estimated 32% increase in the number of practices. Knowledge was not statistically associated with practices.

The zero inflation is suggested to be partly due to nurses who had no previous education in advance care

Table 1. Demographic and professional characteristics of participating nurses[a] (*N* = 196).

Nurse characteristics	
Age, mean (SD), years	42.1 (10.9)
Gender, female, *n* (%)	173 (89.6)
Educational level, *n* (%)	
Secondary education	23 (11.9)
Higher education (college)	131 (67.5)
Higher education (university)	40 (20.6)
Previous training in advance care planning, 'no', *n* (%)	126 (64.3)
Weekly working hours in the nursing home, median (25%–75%; IQR)	30 (30–38)
Years since working in residential care/sector, median (25%–75%; IQR)	12 (5–20.3)
Average number of residents taking care of (daily), median (25%–75%; IQR)	20 (10–35.5)

SD: standard deviation; IQR: interquartile range.
[a]A nurse (as stated in the coordinated Belgian Law on Care Professions, Chapter 4, 2015) has a Nursing diploma or is entitled 'nurse' after having had at least 3 years of study (of at least 4600 h theoretical and clinical education) in nursing.
Missing: age (*n* = 8; 4.1%), gender (*n* = 3; 1.5%), educational level (*n* = 2; 1%), previous training in advance care planning (*n* = 4; 2%), average weekly working hours (*n* = 8; 4.1%), years in sector (*n* = 8; 4.1%) and average number of residents taking care of (*n* = 30; 15.3%).

planning (log odds 0.25; 95% CI: 0.08–0.72; $p < 0.01$; Table 2A).

Discussion

This study showed that whereas having carried out advance care planning practices was not associated with nurses' knowledge, they were estimated to carry out 32% more practices per unit increase in self-efficacy. Consistent with this finding, another recent study also found self-efficacy to be positively associated with the frequency nurses carried out advance care planning.[19] While in both our study and a similar Italian study[18] no association was found between knowledge and advance care planning, it is a rather surprising result since both knowledge *and* self-efficacy are considered necessary for nurses to be able to actually engage in ACP.[3,4,25]

Our results comply with social cognitive theory that assumes an individual's knowledge translates through self-efficacy into action.[10] Hence, while both constructs are important, raising self-efficacy can be considered essential to increase nurses' uptake of advance care planning. Our study therefore implies that existing educational programmes should focus primarily on improving self-efficacy rather than solely increasing knowledge about advance care planning. As we cannot conclude causation from this cross-sectional study, the results might also suggest that carrying out a variety of advance care planning practices leads to having more confidence, and it might therefore have been the act of carrying out advance care planning practices that increased confidence in performing advance care planning. Similarly, a path analysis by Bandura[10,11] and a recent review by Godin et al.[26] showed that self-efficacy is influenced by prior experiences of the action that is required.

A large share of nurses in our sample did not carry out any of the practices, and zero-inflation results show this was significantly associated with having had previous education in advance care planning. Nurses' previous education in advance care planning might therefore function as a predictor of whether nurses engage in advance care planning *at all*. The latter is consistent with a wide range of literature showing limited education is a prominent barrier to engage in advance care planning.[27,28]

Several limitations of this study caution consideration. This was a cross-sectional study with a small sample, conducted in purposively recruited regional nursing homes. Results cannot serve as long-term predictions or inferences about causality, and findings certainly warrant further research to establish causal relationships and to explore other determinants that shape nurses' involvement in advance care planning. In addition, the survey instrument should undergo additional validity testing.[29] And finally, the resulting estimate for knowledge had a broad confidence interval, which reveals the sample size is too small. The results obtained in this study therefore serve to direct a larger, preferably longitudinal study or trial study with randomised or pre-post design to confirm our results. In addition, larger sample sizes are generally recommended when applying Zero-Inflation models.[30]

Conclusion

We found no statistically significant association between knowledge and advance care planning practices carried out by nurses, ranging from starting advance care planning conversations, helping nursing home residents complete their advance directives, to performing advance care planning with people living with dementia. Higher self-efficacy, however, was statistically associated with having carried out more advance care planning practices. While these results warrant future research, educational programmes might consider focusing primarily on raising

Table 2. Advance care planning knowledge, self-efficacy and relationship with advance care planning practices in nurses ($N = 196$).

	n (%)[b]	*M* (*SD*)[b]	Median (25%–75% IQR)[b]	Coefficient β (95% CI)[c]	Exp β (95% CI)[c]	*p* value[c]
ACP knowledge (correct '1' vs incorrect '0')						
Total score ACP knowledge (ranging from 0 to 1)[a]	–	0.58 (0.15)	0.62 (0.45–0.73)	–	–	–
Association between knowledge and ACP practices	–	–	–	0.59 (−0.28 to 1.46)	1.80 (0.76 to 4.29)	0.18
1. An AD allows a resident to communicate his will regarding healthcare in case he would lose his/her cognitive capacity in the future *(true)*	171 (89.5)	0.9 (0.31)	1 (1–1)			
2. A representative has the power to make decisions regarding healthcare in case the resident is no longer able to do this himself *(true)*	142 (74.3)	0.74 (0.44)	1 (0–1)			
3. A resident can only assign a family member as his representative *(false)*	159 (81.5)	0.82 (0.39)	1 (1–1)			
4. A family member can refuse treatments instead of a resident that has no cognitive capacity *(true)*	75 (39.1)	0.39 (0.49)	0 (0–1)			
5. A physician is committed to perform all invasive treatments if a resident/family asks, independent of potential (dis)advantages of those treatments *(false)*	59 (30.1)	0.3 (0.46)	0 (0–1)			
6. According to the law of Patient Rights, both a positive and negative AD is binding *(false)*	49 (25.4)	0.25 (0.44)	0 (0–1)			
7. A residents living with dementia can change his/her AD *(true)*	28 (14.3)	0.15 (0.35)	0 (0–0)			
8. Each family member of a resident living with dementia can change this person's AD *(false)*	155 (79.5)	0.79 (0.41)	0 (0–1)			
9. If a resident that has no cognitive capacity (e.g. someone with severe dementia) has not assigned a representative, it is established by law who will take his/her place in decision-making *(true)*	98 (50.3)	0.50 (0.50)	1 (0–1)			
10. According to the Law on Euthanasia, a physician can perform euthanasia if a person is in an irreversible coma, in case that person has a written AD for euthanasia *(true)*	131 (67.5)	0.68 (0.47)	1 (0–1)			
11. Residents that have no cognitive incapacity and are not terminally ill have the right to refuse treatments, even if this decision can lead to death *(true)*	176 (89.8)	0.90 (0.30)	1 (1–1)			
ACP self-efficacy (ranging from 0 to 10)						
Total score ACP self-efficacy (ranging from 0 to 10)[a]	–	6.29 (1.78)	6.83 (5.2–7.5)	–	–	–
Association between self-efficacy and ACP practices	–	–	–	0.27 (−0.26 to 0.81)	1.32 (0.77 to 2.25)	<0.001
1. Initiating ACP conversations	131 (73.6)	6.30 (2.10)	7 (5–8)			
2. Discussing disease and treatment options with a resident within the context of ACP	132 (72.9)	6.27 (1.9)	7 (5–8)			
3. Discussing ACP	139 (75.9)	6.56 (2)	7 (6–8)			
4. Explain the role of a representative to residents and family	125 (69.1)	6.28 (2.19)	7 (5–8)			

(Continued)

Table 2. (Continued)

	n (%)[b]	*M* (*SD*)[b]	Median (25%–75% IQR)[b]	Coefficient β (95% CI)[c]	Exp β (95% CI)[c]	*p* value[c]
5. Respond to questions of residents regarding ADs	127 (69.4)	6.18 (2.09)	7 (5–8)			
6. Respond to questions of the family regarding ADs	127 (69.0)	6.15 (2.14)	7 (5–8)			
7. Correspond to a residents' written wishes	155 (82.9)	7.05 (1.82)	7 (6–8)			
8. Knowing legislation regarding Ads	100 (53.8)	2.41 (2.34)	6 (4–7)			
9. Talking to family members about wishes for future care	152 (81.7)	6.90 (1.91)	7 (6–8)			
10. Talking about general issues regarding dying and death	146 (76.8)	6.83 (1.88)	7 (6–8)			
11. Conduct a conversation regarding ACP with residents living with dementia	104 (57.1)	5.54 (2.13)	6 (5–7)			
12. Conduct a conversation regarding ACP with family members of residents living with dementia	131 (71.6)	6.22 (2.18)	7 (5–8)			
ACP practices (yes '1' vs no '0')						
Total score ACP practices (ranging from 0 to 1)[a]	–	0.26 (0.31)	0.17 (0–0.5)	–	–	–
1. Started an ACP conversation	62 (31.8)	0.32 (0.47)	0 (0–1)			
2. Documented the outcomes of ACP in a resident's file	69 (35.2)	0.35 (0.48)	0 (0–1)			
3. Completed an AD with a resident	20 (10.2)	0.34 (0.30)	0 (0–0)			
4. Made an estimation if someone was capable of completing an AD	66 (33.8)	0.34 (0.47)	0 (0–1)			
5. Had an ACP conversation with a resident living with dementia	26 (13.3)	0.13 (0.34)	0 (0–0)			
6. Had an ACP conversation with family of a resident living with dementia	60 (30.9)	0.31 (0.46)	0 (0–1)			

ACP: advance care planning; AD: advance directive; SD: standard deviation; IQR: interquartile range; Exp: exponential.

[a]Total scores are means per whole subscale and range from 0 to 1 (10 in self-efficacy). Cases with missing data on more than 25% of items were excluded from total score calculations for that particular scale. Missing total score knowledge and advance care planning practices: $n = 0$. Missing total score self-efficacy: $n = 15$. For the self-efficacy subscale, respondents were also given the opportunity to answer 'not applicable' to all the items. These were not counted in the total mean score.

[b]Observed absolute and relative frequency, not estimated from a model. For self-efficacy, we report *n* (%) for all those reporting self-efficacy levels >5 (on 10-point Likert-type scale). Missing data advance care planning practices: items 1 and 4 ($n = 1$; 0.5%); items 2, 3 and 5 ($n = 0$); and item 6 ($n = 2$; 1%). Missing data knowledge: items 1 and 2 ($n = 5$; 2.6%); items 3, 8 and 9 ($n = 1$; 0.5%); items 4 and 7 ($n = 4$; 2%); items 5 and 11 ($n = 0$); item 6 ($n = 3$; 1.5%); and item 10 ($n = 2$; 1%). Missing data self-efficacy, including those that answered 'not applicable': item 1 ($n = 18$; 9.2%); items 2 and 4 ($n = 15$; 7.7%); items 3, 5 and 12 ($n = 13$; 6.6%); item 6 ($n = 12$; 6.1%); item 7 ($n = 9$; 4.6%); items 8 and 9 ($n = 10$; 5.1%); item 10 ($n = 6$; 3.1%); and item 11 ($n = 14$; 7.1%).

[c]Coefficients, 95% CI and adjusted *p* values were calculated using the Zero-Inflated Poisson count model. Because 15 cases showed a missing on the total score of advance care planning practices, and this was the dependent variable, they were eliminated from this analysis, resulting in a total *N* of 181 for the analysis of associations. Results of the logistic zero model that show which variables are statistically significantly associated with nurses having structurally carried out none of the advance care planning practices are shown in the Supplementary Materials (Table 2A).

self-efficacy rather than increasing knowledge alone, as self-efficacy might be an important precursor in actually improving nurses' uptake of advance care planning in nursing homes.

Author's note

Joni Gilissen is also affiliated with Atlantic Fellow for Equity in Brain Health, Global Brain Health Institute (GBHI), University of California, San Francisco, United States.

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Authors' contributions

All authors involved in the conception and design and interpretation of data. A.W-VD. and J.G. involved in the provision of study materials. J.G. and A.W-VD helped in collection and assembly of data. W.C. involved in data analysis in close collaboration with J.G. J.G., L.P., L.VDB. and C.G. contributed to manuscript writing. All authors provided final approval of manuscript. All authors are accountable for all aspects of the work.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Ethics and consent

This study was submitted as part of a larger trial study and was approved by the Commission of Medical Ethics of the University Hospital of Brussels (ref. B.U.N. 143201834759). All participants gave written consent, including consent for publication of anonymised findings. Trial procedures are described and registered under ClinicalTrials.gov NCT03521206.

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Availability of data

The datasets generated and/or analysed during the current study are not made public to protect confidentiality but are available from the corresponding author upon reasonable request.

Supplemental material

Supplemental material for this article is available online.

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