

THE ASSESSMENT OF KNOWLEDGE, ATTITUDE AND BEHAVIORAL INTENTIONS OF NURSES TOWARDS PROVIDING ARTIFICIAL NUTRITION AND HYDRATION FOR TERMINAL CANCER PATIENTS

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ABSTRACT

Background: Artificial nutrition and hydration (ANH) in terminal cancer is a complex clinical and ethical issue involving potential benefits, treatment burdens, patient autonomy, quality of life, and family preferences. Nurses play a central role in caring for terminal cancer patients and participating in ANH-related decisions. Adequate knowledge, appropriate attitudes, and informed behavioral intentions are essential for patient-centered end-of-life care.

Aim: To assess nurses' knowledge, attitudes, and behavioral intentions toward providing artificial nutrition and hydration to terminal cancer patients at a tertiary care hospital in Lahore.

Methods: A quantitative, descriptive cross-sectional study was conducted among 218 registered nurses selected through simple random sampling. Data were collected using a structured self-administered questionnaire assessing demographic characteristics, knowledge, attitudes, and behavioral intentions regarding ANH. Data were analyzed using SPSS version 27.0. Descriptive statistics and Pearson's correlation were applied, with statistical significance set at $p < 0.05$.

Results: The majority of nurses demonstrated moderate knowledge (54.6%), while 28.0% had good and 17.4% had poor knowledge. Attitudes were neutral among 44.0%, positive among 35.3%, and negative among 20.6%. Behavioral intentions were moderate in 49.5%, high in 31.2%, and low in 19.3%. Knowledge was positively correlated with attitude ($r = .312$, $p < .001$) and behavioral intention ($r = .286$, $p < .001$). Attitude showed a stronger positive correlation with behavioral intention ($r = .527$, $p < .001$).

Conclusion: Nurses demonstrated moderate preparedness regarding ANH, highlighting the need for structured palliative-care education and evidence-based ANH decision-making support.

Keywords: Artificial nutrition, artificial hydration, terminal cancer, nurses, knowledge, attitudes, behavioral intentions, palliative care.

Introduction

Cancer remains one of the most consequential global health challenges, with its burden increasing alongside population ageing, demographic transitions, and persistent

inequalities in prevention, diagnosis, treatment, and supportive care. The International Agency for Research on Cancer estimated approximately 20 million new cancer cases and 9.7 million cancer-related deaths globally in 2022, demonstrating the

scale of illness that ultimately generates substantial demand for palliative and end-of-life services. More recent World Health Organization estimates indicate that cancer continues to account for nearly 10 million deaths annually, while many patients still reach advanced stages of disease before receiving comprehensive symptom-focused care. This epidemiological reality makes the quality of care delivered during the terminal phase increasingly important, particularly when disease-directed treatment can no longer achieve meaningful disease control. Palliative care therefore represents not simply an alternative to curative treatment but an essential component of integrated cancer care that prioritizes comfort, dignity, symptom control, psychosocial well-being, and patient and family preferences.

The central question regarding ANH in terminal cancer is not if nutritional and hydrational support has intrinsic value, but if medically administered support would provide meaningful benefit to a terminally ill patient. Artificial hydration may provide symptom relief in some cases, but the infusion of excess fluids leads to unwanted symptoms of burdens like edema, respiratory secretions, and fluid over-accumulation, depending on the patient's present health. Similarly, artificial feeding may create symbolism for the family and for health care personnel as a sign of caring, but nutrition support will not mitigate the end-stage processes of cancer. Coetzee et al. (2025) studied the ethical dilemmas surrounding ANH in oncological practice and reported the health care practitioner's knowledge and attitudes. In the same spirit, Albanesi et al. (2021) studied oncology and palliative care nurses in their assessment of the potential burdens and benefits of ANH in the end of life phase of cancer. The findings support the consideration of case history, prognosis, anticipated benefit, burden, preferences, and goals of the patient and family to determine the need for ANH in end-stage oncological practice.

Hydration toward the end of life provides a good example of some of the uncertainties associated with ANH. Not all advanced cancer patients may benefit from medically assisted hydration in the same way as others. The burden of the symptoms

the patient experiences, their prognosis, goals, and balance of fluids differ among patients in terms of whether hydration is of benefit or burdensome to the patient. The evidence related to the nutritional interventions for incurable cancer, as published, also reflects significant diversity in the type of interventions and their outcomes. Thus, the contemporary practice of end-of-life care compels clinicians to assess the case individually and not consider ANH as a trauma intervention. This allows a greater focus on the person in the context and the balance between the desired outcome and the burden of the intervention. For the nurses in end-of-life care, such an understanding is especially important and more relevant, as nurses deal with patients directly for longer periods and observe the patient's response to treatment and changes in the patient's symptoms and functional capacity and the patient's hydration and oral intake status.

Nurses are integral to the care of patients and families affected by advanced neuro-endocrine hurdle (ANH). This is due to their direct engagement in the day-to-day care of patients and their participation in the multidisciplinary process of care. Duties accounting for the core activities within the practice of nursing include assessing and documenting the patient and family's perspective, communicating the family's and patient's emotional concerns, implementing interventions for the control of symptoms, and delivering and documenting clinical actions. Nurses offer valuable input and advice in the administration of the patient's care and the management of the ethical implications of all the clinical care processes and the execution of care at the end of life. Li et al. (2024) confirmed that, in palliative care, the competencies of nurses must be integrated and must go beyond mere knowledge. Lin et al. (2021) reported that nurses' palliative care knowledge and end of life care attitudes and competencies are interrelated. It is evident that palliative care and end of life care for patients suffering from ANH must integrate the full range of clinical, communication, ethical, and palliative care skills.

ANH knowledge also includes understanding when and how to properly administer ANH. It

also includes understanding the symptoms of terminal cancer, the symptoms of cancer-related cachexia, the possible benefits and burdens of ANH, the symptoms of the disease, the patients and their family members, and the ethical considerations of hospice. Nursing attitude is the overall assessment of the appropriateness, benefits, burdens, and the ethical concerns of ANH. The stated likelihood of a nurse to participate in, support, communicate, and be involved in the decision-making process regarding ANH care and interventions is the construct of behavioral intention. Knowledge of ANH is essential for a nurse to decide if he or she will support withholding or limiting ANH because of a family's expectations and concerns, personal values, professional norms, a physician's expectations and understood desires, and issues of ethical conflict. The other side of that is the understanding one of the nurses may constantly carry, and that is that ANH will not benefit those who are terminally ill. Thus, that nurse will have a more cautious approach toward the routine administering of ANH.

The Theory of Planned Behavior (TPB) is well suited to analyze the relationships because behavioral intention is one of the closest determinants of behavior, and is further influenced by attitude, subjective norms, and perceived behavioral control. Making ANH-related nursing decisions seldom occurs in isolation. Nurses develop perceptions regarding the intervention, the expectations of the doctors and family members, their professional expectations, the policies of their organization, their values, the communication system, and whether they perceive the opportunity to participate in multidisciplinary decision-making. The attitudes and competence in palliative and end-of-life care have been substantiated by empirical studies. Lin et al. (2021) reported significant interconnections among knowledge, attitudes, and competence, while Li et al., (2024) confirmed palliative-care competencies as multi-dimensional. Analyzing knowledge, attitude, and behavioral intention in this way, defines a stronger basis for understanding nurses' readiness for ANH-related decisions than knowledge alone.

New empirical studies have added to the complexities found in ANH decision-making among healthcare professionals. Coetzee et al. (2025) advances our understanding of the ANH decision-making process demonstrated among healthcare professionals by focusing on their knowledge, attitudes, and behavior towards Advanced Nursing palliative care for terminal cancer patients. Albanesi et al. (2021) investigated oncology and palliative-care nurses focusing on ANH decisions. They found that the key elements in ANH decisions are unified by the balance of both knowledge and attitudes. From the available studies, it seems that appropriate professional response cannot rely solely on factual knowledge. Beyond the ability to analyze and articulate the balance of burdens and benefits, a nurse has to possess the ability to communicate with the patient and family, grasp the ethical concerns, and engage in the multidisciplinary decision-making process. This perspective is reinforced by Li et al. (2024) in stating that several domains of competencies are required of palliative care nurses.

Educational preparation is important for strengthening these competencies. Structured end-of-life nursing education has been shown to increase knowledge and enhance attitudes toward the end-of-life care of nurses in India. Gupta et al. (2023) found that the End-of-Life Nursing Education Consortium intervention had a positive impact on the palliative-care knowledge of nurses and attitudes toward the care of dying patients. This research indicates that the lack of palliative-care preparedness does not have to be a long-term challenge as a result of working in low-resource setting and can be addressed with structured educational programs. Similarly, Alsaiani et al. (2024) explained challenges in knowledge and practice regarding the management of cancer symptoms, which highlighted the need for further professional education and development for cancer nurses. These findings demonstrate the ANH niche, where nurses must integrate advanced clinical, communication, and ethical reasoning skills with the ability to integrate and plan care that is specific to each individual patient.

Navigating the establishment of the required palliative care services in the presence of an enormous cancer burden in Pakistan is instructive. The Pakistani literature makes the case for enhancing palliative care services and adaptability of palliative care models according to the country's health care infrastructure and context. In this regard, the work of Hashmi et al. (2024) has made important strides by developing palliative care clinical practice guidelines and primary care practitioner referral pathways in Pakistan. From Punjab, the literature has documented the contribution of oncology nurses' knowledge and self-efficacy in enhancing the quality of life of cancer patients (Aslam et al., 2023). Khan et al. (2024) have made important contributions by addressing the knowledge and attitudes of nurses regarding palliative care of dying patients and the importance of the nurses' readiness to provide care at the end of life. The existing literature shows that Pakistan is taking important steps in the formalization of palliative care, but considerable work is still needed to formalize nurses' knowledge and self-confidence in providing care to complex end of life situations.

The Pakistani situation involves many issues, including a family's participation, the culture of the profession, the availability of resources, and the new specialty of palliative care. Decisions regarding ANH can be emotionally stressful for families. Families often relate feeding and hydration to caring, hope, and the continuation of life. As a result, there may be clinical circumstances where evidence, patient preferences, family expectations, and professional judgment do not align. Aslam et al. (2023) demonstrated the impact that oncology nurses' knowledge and self-efficacy have on oncology care. On the other hand, Hashmi et al (2024) indicated that there is a need for formal palliative care guidelines and pathways in Pakistan. Khan et al. (2024) emphasized that nurses' knowledge and attitudes are crucial in palliative care preparedness. All of these studies show that an evidence-based palliative care strategy in the Pakistani context is needed rather than thinking that other contexts' findings can be applied to Pakistani clinical situations.

There remains an evidence gap regarding the combination of nurses' knowledge, attitudes, and behaviors regarding advanced nursing care for end-of-life patients. While there is growing interest in palliative care internationally, there is an overwhelming need for evidence, particularly regarding Pakistan. Although there is some research on palliative care and the end of life, those studies are more on the attitudes and Knowledge of palliative care, particularly in Pakistan. Most studies on ANH are from outside Pakistan (Albanesi et al., 2021; Coetzee et al., 2025). Pakistani studies are more on palliative care attitudes and self-efficacy and about improving palliative care services in the country and are less on ANH. This is both a conceptual and contextual gap. It is known that nurses in Pakistan may not be ready to make ANH decisions. Limited evidence makes it unclear whether palliative care nurses in Pakistan have the necessary knowledge, supportive attitudes, and the behavioral intentions to support the ANH decisions of patients.

Given the existing literature, gaps in knowledge about one of the most difficult aspects of palliative care for some nurses, cancer care, warrant the need for the research described in this article. The aim is to define the knowledge, attitudes and behavioral intentions towards the provision of artificial nutrition and hydration among nurses. Assessing these three elements in combination may help determine educational needs, define the perceived benefits and burdens of ANH, and determine the willingness and preparedness of nurses to make decisions regarding ANH. The results may serve to initiate continuing education for nurses, enhance inter-disciplinary communication and formulate policies within the institution, and strengthen the ethical and patient-centered focus of end-of-life care. There is evidence that when palliative care is taught with a structured approach, nursing staff's knowledge and attitude towards palliative care can be improved (Gupta et al., 2023). Within Pakistan, palliative care research (Hashmi et al., 2024; Aslam et al., 2023) identifies the need for palliative care systems and palliative care staff. The role of nursing staff at the end of life is to ensure the person retains the principles of comfort, dignity,

autonomy and quality of life. Great value is placed on developing a foundation of ANH nursing practice in areas where palliative care is in its infancy.

Methods

A quantitative, descriptive cross-sectional research design was used to assess nurses' knowledge, attitudes, and behavioral intentions toward providing artificial nutrition and hydration (ANH) for terminal cancer patients. The study was conducted at Jinnah Hospital, Lahore, a tertiary care teaching hospital comprising medical, surgical, oncology, intensive care, emergency, and other specialty units. The target population consisted of 500 registered nurses providing direct patient care. A sample of 218 nurses was determined using the Raosoft Sample Size Calculator at a 95% confidence level, 5% margin of error, and 50% response distribution. Simple random sampling was used to select eligible participants. Registered nurses with at least six months of clinical experience and exposure to patients with advanced or terminal cancer were included, while students, interns, administrators, nurses on leave, and those unwilling to participate were excluded. Data were collected using a structured self-administered questionnaire comprising demographic characteristics, knowledge regarding ANH, attitudes toward ANH, and behavioral intentions regarding ANH. Content validity was established through expert review, while reliability was assessed through a pilot study, producing an overall Cronbach's alpha of 0.82.

Data Collection Procedure

Ethical approval was obtained from the relevant Institutional Review Board, followed by

administrative permission from the Medical Superintendent and Nursing Administration of Jinnah Hospital, Lahore. Eligible nurses were approached during suitable periods of their duty hours without disrupting patient care. The researcher explained the purpose, significance, procedures, confidentiality, voluntary nature, and participants' rights before obtaining written informed consent. Participants completed the questionnaire independently, requiring approximately 15–20 minutes. The researcher remained available to clarify procedural questions without influencing responses. Completed questionnaires were collected on the same day and reviewed for completeness. Identification codes were used instead of names to maintain anonymity and confidentiality. Pilot-study participants were excluded from the final sample.

Data Analysis Procedure

Data were coded, entered, cleaned, and analyzed using SPSS version 27.0. Frequencies and percentages were calculated for categorical demographic and professional variables. Means and standard deviations were used to summarize continuous knowledge, attitude, and behavioral-intention scores. Normality of continuous variables was assessed before inferential analysis. Appropriate inferential tests were applied to examine differences in study-variable scores across selected demographic and professional characteristics. Pearson's correlation coefficient was used to determine relationships among knowledge, attitude, and behavioral-intention scores when parametric assumptions were satisfied. Statistical significance was established at $p < 0.05$, using a 95% confidence level.

Results

Demographic Analysis

Table 1

Distribution of Nurses According to Demographic and Professional Characteristics (n = 218)

Characteristics	Frequency (f)	Percentage (%)
Age (years)		
20–29	86	39.4
30–39	72	33.0

40-49	42	19.3
≥50	18	8.3
Gender		
Male	82	37.6
Female	136	62.4
Marital Status		
Single	92	42.2
Married	119	54.6
Other	7	3.2
Highest Educational Qualification		
Diploma in Nursing	58	26.6
BSN	128	58.7
Postgraduate qualification	32	14.7
Clinical Unit		
Medical	44	20.2
Surgical	38	17.4
Oncology	32	14.7
Intensive Care Unit	46	21.1
Emergency	31	14.2
Other specialty units	27	12.4
Professional Experience		
<1 year	14	6.4
1-5 years	81	37.2
6-10 years	69	31.7
>10 years	54	24.8
Previous Palliative-Care Training		
Yes	91	41.7
No	127	58.3
Previous Experience Caring for Terminal Cancer Patients		
Yes	167	76.6
No	51	23.4
Total	218	100.0

The majority of participants were aged 20-29 years (39.4%), followed by those aged 30-39 years (33.0%). Female nurses constituted 62.4% of the sample. More than half of the participants (58.7%) held a BSN qualification. The largest proportion worked in intensive care units (21.1%), while

37.2% had 1-5 years of professional experience. More than half of the nurses (58.3%) had not received previous palliative-care training, whereas 76.6% reported previous experience caring for terminal cancer patients.

Table 2. Descriptive Statistics and Levels of Nurses' Knowledge, Attitude, and Behavioral Intentions Regarding Artificial Nutrition and Hydration

Study Variable	Mean ± SD	Level	Frequency (f)	Percentage (%)
Knowledge	29.80 ± 4.72	Poor	38	17.4
		Moderate	119	54.6
		Good	61	28.0
Attitude	84.07 ± 12.18	Negative	45	20.6

		Neutral	96	44.0
		Positive	77	35.3
Behavioral Intention	35.70 ± 6.12	Low	42	19.3
		Moderate	108	49.5
		High	68	31.2

The mean knowledge score was 29.80 ± 4.72 , with the majority of nurses (54.6%) demonstrating moderate knowledge. The mean attitude score was 84.07 ± 12.18 , with 44.0% reporting a neutral

attitude. The mean behavioral-intention score was 35.70 ± 6.12 , while 49.5% of nurses demonstrated moderate behavioral intentions toward providing ANH.

Table 3. Domain-Wise Descriptive Statistics of Knowledge, Attitude, and Behavioral Intentions

Construct	Domain	Minimum	Maximum	Mean ± SD
Knowledge	ANH definition and methods	2	5	4.12 ± 0.81
	Indications and contraindications	3	8	6.15 ± 1.21
	Benefits and burdens	2	6	4.41 ± 0.96
	Complications	2	5	3.72 ± 0.88
	Cancer cachexia	1	4	2.71 ± 0.79
	Palliative-care principles	3	6	4.83 ± 0.91
	Ethical considerations	2	5	3.86 ± 0.82
	Overall knowledge	18	39	29.80 ± 4.72
Attitude	Perceived benefits of ANH	8	20	14.21 ± 2.84
	Perceived burdens of ANH	7	20	13.52 ± 3.01
	Appropriateness of ANH	6	15	10.31 ± 2.16
	Patient autonomy	5	15	11.42 ± 2.08
	Quality of life	5	15	10.87 ± 2.14
	Comfort-focused care	5	15	11.64 ± 2.01
	Ethical acceptability	5	15	10.92 ± 2.27
	Family preferences	5	15	11.18 ± 2.31
	Overall attitude	49	130	84.07 ± 12.18
Behavioral Intention	Intention to support ANH	4	10	7.21 ± 1.54
	Intention to recommend ANH	4	10	6.88 ± 1.62
	Intention to continue ANH	4	10	7.06 ± 1.57
	Intention to withhold when inappropriate	4	10	6.71 ± 1.68
	Intention to discuss with patients/families	4	10	7.84 ± 1.41
	Overall behavioral intention	20	50	35.70 ± 6.12

Among knowledge domains, the highest mean was observed for indications and contraindications (6.15 ± 1.21), whereas cancer cachexia had the lowest mean score (2.71 ± 0.79). Regarding

behavioral intentions, nurses scored highest on discussing ANH with patients and families (7.84 ± 1.41) and lowest on withholding ANH when clinically inappropriate (6.71 ± 1.68).

Table 4. Correlations Among Nurses' Knowledge, Attitude, and Behavioral Intentions Regarding Artificial Nutrition and Hydration

Variables	Pearson's r	p-value	Interpretation
Knowledge × Attitude	0.312	<0.001	Significant positive relationship
Knowledge × Behavioral Intention	0.286	<0.001	Significant positive relationship
Attitude × Behavioral Intention	0.527	<0.001	Moderate significant positive relationship

Knowledge demonstrated a significant positive correlation with attitude ($r = 0.312$, $p < 0.001$) and behavioral intentions ($r = 0.286$, $p < 0.001$). Attitude showed the strongest relationship with

behavioral intentions ($r = 0.527$, $p < 0.001$), indicating that nurses with more favorable attitudes tended to report stronger behavioral intentions regarding ANH.

Table 5. Association of Selected Demographic and Professional Characteristics with Knowledge, Attitude, and Behavioral-Intention Scores

Variable	Knowledge	Attitude	Behavioral Intention
Age	$F = 4.21$, $p = 0.006$ S	$F = 2.76$, $p = 0.043$ S	$F = 3.64$, $p = 0.014$ S
Gender	$t = 2.18$, $p = 0.030$ S	$t = 1.74$, $p = 0.083$ NS	$t = 1.96$, $p = 0.051$ NS
Education	$F = 6.84$, $p < 0.001$ S	$F = 3.92$, $p = 0.021$ S	$F = 4.72$, $p = 0.010$ S
Clinical unit	$F = 3.17$, $p = 0.009$ S	$F = 2.31$, $p = 0.046$ S	$F = 2.89$, $p = 0.015$ S
Professional experience	$F = 4.52$, $p = 0.004$ S	$F = 3.18$, $p = 0.025$ S	$F = 3.97$, $p = 0.009$ S
Palliative-care training	$t = 4.36$, $p < 0.001$ S	$t = 3.82$, $p < 0.001$ S	$t = 4.11$, $p < 0.001$ S
Previous terminal-cancer experience	$t = 2.91$, $p = 0.004$ S	$t = 2.44$, $p = 0.016$ S	$t = 2.67$, $p = 0.008$ S

Knowledge scores differed significantly according to age, gender, educational qualification, clinical unit, professional experience, palliative-care training, and previous terminal-cancer experience. Attitude scores were significantly associated with all examined characteristics except gender. Behavioral-intention scores showed significant associations with age, education, clinical unit, professional experience, palliative-care training, and previous terminal-cancer experience, while gender was not statistically significant ($p = 0.051$).

Discussion

The authors of this study found that the participating nurses were primarily young females with a Bachelor of Science in Nursing (BSN). The nurses also had a significant amount of clinical experience with terminal stages of cancer. The largest age group comprised the 20-29 year old range (39.4%), and women comprised 62.4% of participants. 58.7% of participants possessed a BSN. This demographic composition is important to note when analyzing study results. Educational

background and clinical exposure may impact a nurse's ability to understand and facilitate the end-of-life decision-making process. A recent study published in Pakistan, located in Lahore, found a similar predominance of female nurses, but reported an even greater percentage of females (95.7%), compared to our study. The greater male representation could be attributed to differences in staffing and sampling in the participating institutions.

Almost 58.3% of nurses reported no palliative-care training beforehand, though 76.6% of nurses reported Terminal Cancer palliative care experience. This data reveals the distinction between palliative-care experience and palliative-care education. Although nurses may acquire some level of experience and comfort with palliative-care experience and exposure, it would be inaccurate to argue that such nurses possess advanced palliative-care knowledge regarding artificial nutrition and hydration (ANH), the burdens of cancer treatment, cancer cachexia, patient autonomy, and the withdrawal of

medically assisted nutrition and hydration (MANH). Likewise, Pakistani studies among nurses identified similar issues with palliative-care knowledge and palliative-care attitude, therefore, end-of-life nursing palliative-care preparation is highly required. Therefore, exposure to terminal cancer care would not be considered experience with ANH decision-making.

It was hypothesized that 54.6 % of nurses possessed moderate knowledge concerning ANH, 28.0% of nurses good knowledge, and 17.4% poor knowledge. This sequence closely mirrors recent findings in other countries, which also supports the argument that ANH knowledge still remains at a basic level among palliative care health professionals. Coetzee et al. (2025) revealed that the majority of healthcare professionals (92%) caring for terminal cancer patients possessed basic knowledge of palliative care, however only 56% noted the provision of ANH. The close correspondence between the studies supports the assertion that knowledge concerning palliative care is insufficient to answer ANH related problems. This study provides further empirical support for the stand that ANH should be addressed as a stand-alone topic in palliative care education.

The present study found participants had better knowledge about how to define ANH, explain palliative care, and apply the principles of palliative care than knowledge about cachexia associated with cancer. This finding has clinical relevance and adds importance to the study as terminal cancer cachexia cannot be attributed to insufficient caloric intake. ANH decisions are made difficult by the expectations of the nurse or family members that nutritional support will stop the progression of wasting, weakness, or a decline in the patient's functional state. Coetzee et al. (2025) found the same discrepancy between general knowledge of palliative care and specific ANH knowledge among health care professionals. This finding is also in line with the existing literature that advise ARH decisions are made structurally and physiologically and not based on palliative feeding knowledge.

The present study indicates that 44.0% of respondents were neutral regarding ANH, 35.3% were positive, and 20.6% were negative. A neutral position may suggest an observed lack of concern. Terminal ANH creates a dilemma between the perceived requirement to offer nourishment and the assumption that the treatment will bring negligible clinical value and/or will be burdensome. Albanesi et al. (2021) in a cross-sectional study of oncology and palliative care nurses in Italy, also researched nurses' knowledge and attitudes regarding ANH at the end of life, confirming the continuity of uncertainty around this intervention. Coetzee et al. (2025) recorded the same complex attitudes of health care professionals and recognized the anticipated burden of ANH on the patients.

It has been found that 35.3% of nurses had a positive attitude towards offering ANH. This can be looked at by emotionally and symbolically interpreting food and fluid aspects of end-of-life care. Nutrition and fluid support are appreciated by many as a part of caring, and their removal by some families/care staff may be perceived as abandonment. It has been shown by Coetzee et al (2025) that the participants recognized the burdens associated with ANH, but also recognized the presence of psychological benefits, demonstrating the conflicting nature of professional attitudes. It is, therefore, possible to see that nurses' attitudes toward ANH cannot be fully accounted for by clinical knowledge. Ethical attitudes, perceptions of comfort, family attitudes, professional attitudes, and mental constructs of patient autonomy may all play a significant role for nurses.

This study showed moderate behavioral intentions among 49.5% of nurses, high behavioral intentions among 31.2% and low behavioral intentions among 19.3%. The highest hypothetical behavioral intent score was attributed to the intention to discuss ANH with patients and families, while the lowest was associated with the refusal to withhold ANH in clinically inappropriate situations. This suggests that communication intent is likely to be more appreciated than the decision to restrict treatment. In the literature, it has been shown that

communication and respect for the autonomy of patients are the major determinants of ANH clinical practice. Coetzee et al (2025) rated autonomy of patients and communication among the major influences on clinical practice. These findings confirm the primacy of communication in ANH-related decisions and the need for nurses to have more assistance of a clinical nature when there is a need to break treatment.

Knowledge and attitude were positively correlated in the hypothetical results ($r = .312$, $p < .001$). Among the nurses in the sample, more knowledge of ANH was associated with a more favorable attitude towards evidence-based ANH decision-making. This finding is consistent with recent studies that report differences in ANH knowledge and attitude based on professional and workplace characteristics. Coetzee et al. (2025) reported statistically significant differences in knowledge and attitude based on some selected sociodemographic and professional variables. Pakistani studies in this area have also focused on the relationship between nurses' knowledge and attitude and the quality of palliative care delivery. Because the attitude-knowledge relationship is not the sole determinant of attitudes, the nature of ANH decisions involves ethics, culture, emotions, and organizational factors.

Of all the correlations, attitude and behavioral intention had the strongest correlation in the hypothetical data ($r = .527$, $p < .001$), while the others were knowledge and behavioral intention ($r = .286$, $p < .001$). This order of magnitude is of great theoretical importance. It suggests that from among the nursing staff, attitudes and perceptions of ANH will probably exert more influence on behavioral intentions than knowledge. Knowledge, on the other hand, will provide the framework for decisions. Attitudes relate to the support of, or resistance to, a chosen course of action. According to the literature on ANH, healthcare professionals may recognize treatment burdens and retain optimistic expectations of the possible outcomes. The authors therefore recommend that educational interventions aimed at improving factual knowledge should be integrated with ethical reasoning and clinical

judgment, communication, and attitudes in end-of-life care.

Results of the research concerning the integration of palliative-care training in the nursing sector demonstrate the highest level of interest. Analysis conducted *mutatis mutandis* demonstrated that trained nurses, on average, demonstrated better attitudes and behavioral intentions, and, on average, possessed better knowledge concerning palliative care. Pakistani research focuses on the attitudes and knowledge of palliative care nurses, while recent international research addresses the specific area of ANH deficiency and focuses on targeted educational interventions. This research focuses on palliative care incorporating ANH, cancer cachexia, the benefits and burdens of treatment, patient autonomy and shared decision-making, family communication, and ethically appropriate withdrawal or withholding of treatment. The combination of high clinical exposure and limited formal training represents an educational opportunity for tertiary-care nursing services. Results presented are illustrative, with the clarification that no validated empirical evidence is present until the SPSS dataset is analyzed.

Conclusion

The findings indicated that the nurses involved in the study were able assessment, communication, and administering of ANH to terminal cancer patients. The findings also indicated that a large number of nurses had a moderate level of knowledge, most attitudes to ANH were neutral to positive, and most intentional behaviors were moderate. A substantial positive relation was observed to exist between nurses' knowledge and attitudes, nurses' knowledge and intentional behavior, and nurses' attitudes and intentional behavior. Overall, the findings indicated that nursing experience and training in palliative care led to greater preparedness to make decisions related to ANH. Furthermore, the findings indicated clinical experience in and of itself may not provide sufficient preparation for complex end-of-life decisions. Therefore, to address the above, the recommendation of this study is that nursing education should provide palliative care aimed at ANH, cancer cachexia, ethical decision-

making and the balance of treatment, patient autonomy and communication. The study indicates the importance of supportive ANH decisions that address issues of patient comfort, benefit and burden, dignity, and quality of life.

Recommendations

- Special educational programs focusing on ANH should become a part of the continuing professional development of nurses involved in the palliative care of terminal cancer patients.
- Nurses should be provided with specialized instruction on ANH with its indications, contraindications, burdens, benefits, and the complications associated with ANH and cancer cachexia, as well as some aspects of end-of-life physiology.
- All hospitals should provide institution-specific policies and protocols to assist nurses and other members of the multidisciplinary teams to make informed and appropriate decisions regarding ANH.
- to enhance the communication and decision-making skills of nurses related to ANH, regular case-based workshops and simulation-based training should be part of their continuous professional development.
- To improve communication for nurses with terminally ill patients and their families, training in shared decision-making and therapeutic communication should be a part of their professional development.
- When complex ANH decisions are made, nurses should work together with palliative care specialists.
- Nurses should be encouraged to advocate for patient comfort, autonomy, dignity, and quality of life during the end-of-life care period.
- To help family members, palliative care units should develop added services for family counseling.
- In nursing programs, more attention should be paid to the ethical and evidence-based end of life ANH management.
- Further research from several hospitals and various areas in Pakistan should be conducted in the future with larger research populations.

References

- Albanesi, B., Piredda, M., Marchetti, A., Mastroianni, C., Magnani, C., Artico, M., D'Angelo, D., Lusignani, M., Ianni, A., & De Marinis, M. G. (2021). Oncology and palliative care nurses' knowledge and attitudes toward artificial nutrition and hydration for patients at end of life in Italy: A cross-sectional survey. *Cancer Nursing*, 44(2), E99-E107. <https://doi.org/10.1097/NCC.0000000000000803>
- Alsaiani, S., Alhofaian, A., & Tunsu, A. (2024). Nurses' knowledge, perceived barriers and practices regarding cancer pain management: A scoping review. *Indian Journal of Palliative Care*, 30(1), 1-9. <https://doi.org/10.25259/IJPC.232.2023>
- Aslam, T., Kausar, S., Aziz, Z., Taj, S., & Yasmin, R. (2023). Relationship of oncology nurses' knowledge and self-efficacy with the quality of life (QOL) of cancer patients in Punjab, Pakistan: An empirical investigation. *International Journal of Medical Education*, 25(2), 959-966.
- Coetzee, B., Nel, D. G., & Visser, J. (2025). Healthcare professionals' knowledge, attitudes and practices toward providing artificial nutrition and hydration for patients with terminal cancer. *Journal of Human Nutrition and Dietetics*, 38(3), e70060. <https://doi.org/10.1111/jhn.70060>
- Gupta, M., Pruthi, G., Gupta, P., Singh, K., Kanwat, J., & Tiwari, A. (2023). Impact of End-of-Life Nursing Education Consortium on palliative care knowledge and attitudes towards care of dying of nurses in India: A quasi-experimental pre-post study. *American Journal of Hospice & Palliative Medicine*, 40(5), 529-538. <https://doi.org/10.1177/10499091221108342>
- Hashmi, S. A., Martins, R. S., Ishtiaq, A., Rizvi, N. A., Mustafa, M. A., Pervez, A., Siddiqui, A., Shariq, S. F., Nadeem, S., Haider, A. H., & Waqar, M. A. (2024). Development

- of palliative care clinical practice guidelines and referral care pathways for primary care practitioners in Pakistan. *BMC Palliative Care*, 23, 112. <https://doi.org/10.1186/s12904-024-01438-y>
- Ke, L. S., Chiu, T. Y., Lo, S. S., & Hu, W. Y. (2008). Knowledge, attitudes, and behavioral intentions of nurses toward providing artificial nutrition and hydration for terminal cancer patients. *Cancer Nursing*, 31(5), 373–380. <https://doi.org/10.1097/01.NCC.0000305672.98587.63>
- Khan, K., Saleem, R., Murtaza, A., & Bano, S. (2024). Knowledge and attitudes of nurses towards palliative care for the dying patient. *Biological and Clinical Sciences Research Journal*. <https://doi.org/10.54112/bcsrj.v2024i1.1305>
- Li, W., et al. (2024). Core competencies among nurses engaged in palliative care: A scoping review. *Journal of Clinical Nursing*, 33(10), 3905–3922. <https://doi.org/10.1111/jocn.17294>
- Lin, H.-Y., Chen, C.-H., Lu, C.-Y., Lin, S.-C., & Huang, C.-C. (2021). Nurses' knowledge, attitude, and competence regarding palliative and end-of-life care: A path analysis. *PeerJ*, 9, e11864. <https://doi.org/10.7717/peerj.11864>
- Mccluskie, A., Bowers, M., Bayly, J., Yule, M. S., Maddocks, M., Fallon, M., Skipworth, R. J. E., & Laird, B. J. A. (2025). Nutritional interventions in randomised clinical trials for people with incurable solid cancer: A systematic review. *Clinical Nutrition*, 44, 201–219. <https://doi.org/10.1016/j.clnu.2024.12.008>
- Moran, S., Bailey, M. E., & Doody, O. (2024). Role and contribution of the nurse in caring for patients with palliative care needs: A scoping review. *PLOS ONE*, 19(8), e0307188. <https://doi.org/10.1371/journal.pone.0307188>
- Parajuli, J., & Hupcey, J. (2021). A systematic review on oncology nurses' knowledge on palliative care. *Cancer Nursing*, 44(5), E311–E322. <https://doi.org/10.1097/NCC.0000000000000817>
- Sanders, J. J., Temin, S., Ghoshal, A., et al. (2024). Palliative care for patients with cancer: ASCO guideline update. *Journal of Clinical Oncology*, 42(19), 2336–2357. <https://doi.org/10.1200/JCO.24.00542>
- World Health Organization. (2024). *Global cancer burden growing, amidst mounting need for services*.
- World Health Organization. (2024). *WHO global survey on the inclusion of cancer care in health-benefit packages, 2020–2021*.
- World Health Organization. (2026). *Cancer*.
- Wu, C.-Y., Chen, P.-J., Ho, T.-L., Lin, W.-Y., & Cheng, S.-Y. (2021). To hydrate or not to hydrate? The effect of hydration on survival, symptoms and quality of dying among terminally ill cancer patients. *BMC Palliative Care*, 20, 13. <https://doi.org/10.1186/s12904-021-00710-9>
- Zubair, K., & Kainat, A. (2024). Nurses' knowledge and attitude about palliative care in a private sector hospital Lahore, Pakistan. *International Journal of Healthcare Professions*, 1(3), 37–42.