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Reasons for Withholding and Withdrawing Life Support to Patients in a General Intensive Care Unit

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ABSTRACT

Introduction: Withholding (WH) of life support is defined as the decision not to start or increase a life-sustaining intervention, and withdrawing (WD) of life support is defined as the decision to actively stop a life sustaining intervention. The objective of this study is to find out the reasons for withholding/withdrawal of life support and its frequency in the context of Nepal.

Methods: A descriptive cross sectional study of intensive care unit (ICU) patients with poor prognosis from January 2017 to December 2018 year was undertaken in KIST Medical College Teaching Hospital.

Results: The total number of patients who underwent withholding and/or withdrawal of life support during the period of study for various reasons was 53. Among them, 30 (56.6%) were males and 23 (43.4%) were females. The age of patients included in the study ranged from 17 to 89 years of age with an average age of 59.1 years. The calculated Acute Physiologic Assessment and Chronic Health Evaluation II (APACHE II) score ranged from 50 to 10 and the predicted mortality ranged from 98.4% to 6.9%. The mean of calculated APACHE score was 33.6% and mean of predicted mortality was 73%. Of the total 53 patients, 30 patients were taken off life support due to poor prognosis, 9 due to financial constraints and 14 due to both poor prognosis and financial constraints.

Conclusion: The most common reason for withholding /withdrawal of life support is either poor prognosis or financial constraints or both.

Keywords: APACHE; ICU; Life support; Withdrawal; Withhold

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INTRODUCTION

Withholding (WH) of life support is defined as the decision not to start or increase a life-sustaining intervention, and withdrawing (WD) of life support is defined as the decision to actively stop a life sustaining intervention.¹

Intensive care unit (ICU) admission is growing proportionately with the increasing ICU services provided.^{2,3} ICU improves outcomes for patients, but when non responsive patient are unlikely to make meaningful recovery, decisions regarding end of life care have to be made.

Decision of WH/WD of life support has become routine in Western world.^{4,5} This decision is influenced by many factors including disease severity or irreversibility, the presence and severity of comorbidities, age, religious and cultural beliefs, legal concerns and the subjective evaluation of benefits and financial burden of life support.⁶

Although Nepal Medical Council guidelines (2017)⁷ has mentioned when to discontinue life support information regarding factors associated with it; its frequency is lacking; and this study aims to clarify that withholding or withdrawal of life support, though ethically a challenging topic, is relatively common practice in Nepal. But, it has rarely been discussed and studied in the context of our country. This study seeks to break the taboo and bring forth the necessary discussion regarding this sensitive issue.

METHODS

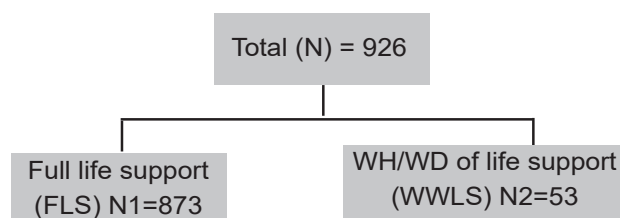
A retrospective descriptive cross-sectional study was carried out in KIST Medical College and Teaching Hospital. A total of 926 patients admitted in our ICU from January 2017 to December 2018 were included in the study. In our study we divided the patients into two groups; patients whom withdrawing or withholding life support (WWLS) was done and those who received full life support (FLS). For the patients whom withdrawal /withholding of life support was done, the proforma was filled up during the chart review.

The variables which seem to correlate the outcome of our study were collected. The number of failing organs of patient was recorded. Patient requiring inotropic

support for maintaining blood pressure was entered as circulatory failure. Cases requiring noninvasive or invasive ventilator support were recorded as respiratory failure, cases having Glasgow Coma score (GCS) less than nine as neurological failing patient, patients with known chronic kidney disease or acute renal injury and deranged renal function test who requires urgent hemodialysis were documented as renal failure. Patient with deranged coagulation profile, thrombocytopenia, raised prothrombin time, INR and cases with significant bleeding were listed as cases with hematological failure. Cases of chronic liver disease or with acute hepatic failure with deranged hepatic function, raised bilirubin level, hepatic enzymes and low albumin were listed as patients with hepatic failure.

Patients were assessed using the Acute Physiologic Assessment and Chronic Health Evaluation II (APACHE II) score in last 24 hours. APACHE score is a critical care scoring system and was introduced in 1985. It generates a point score ranging from 0 to 71 based on 12 physiologic variables, age and underlying co-morbid health condition.⁸ Increasing score is associated with increasing risk of hospital death. MD Calc, medical calculator was used to calculate the score and mortality rate. MD Calc is a free online medical reference for healthcare professionals that provides point-of-care clinical decision-support tools, including medical calculators, scoring systems, and algorithms.⁹

Written consents for withdrawal and withhold of treatment were taken. Ethical clearance was provided by the National Health Research Council (NHRC). Responsible person, treating physician and reason for decision was entered. For the patient receiving life supports, type of life support to be withheld or withdrawal and the treatments to be continued were documented.



Baseline characteristics and diagnosis of patient were abstracted from the hospital records. Total ICU stay was calculated from date of admission and date of discharge from ICU. Any changes in the decision of withhold and withdrawal and reason for such change was also noted. Final outcome of the patient during his stay in ICU was noted.

That data was entered in Microsoft Excel spreadsheet and analyzed using SPSS version 25. Descriptive statistics are presented as mean, percentages and range. Significant data are presented as bar graphs and pie diagrams.

RESULTS

The total number of patients who underwent withdrawal or withhold of life support during the time period of study for various reasons was 53. Among them, 30 (56.6%) were males and 23 (43.4%) were females. The age of patients included in the study ranged from 17 to 89 years of age with an average age of 59.1 years. The youngest patient was a male of age 17 years with a diagnosis of community acquired pneumonia who had to be withdrawn from life support due to financial constraints. His APACHE score was 23 with predicted mortality of 46%. The eldest was 89 years female with diabetes mellitus and urosepsis and her predicted mortality was 84.9% and APACHE score of 42. She was taken off life support due to both poor prognosis and financial constraints.

The calculated APACHE score ranged from 50 to 10 and the predicted mortality ranged from 98.4% to 6.9%. The mean of calculated APACHE score was 33.6% and mean of predicted mortality was 73%. The mean days of admission in the ICU among the involved patients in the study was 5.2 days ranging from 1 to 26 days.

Of the total 53 patients, 30 patients were taken off life support due to poor prognosis, 9 due to financial constraints and 14 due to both poor prognosis and financial constraints.

On evaluation of failure of organ system, most common cause of poor patient prognosis was found to be respiratory followed by neurological system. The various types of life supporting treatments that were withheld/ withdrawn from the patient is illustrated in the Figure 1. The treatments that were continued despite the poor prognosis is shown in the Figure 2.

Treatment Withheld/Withdrawn

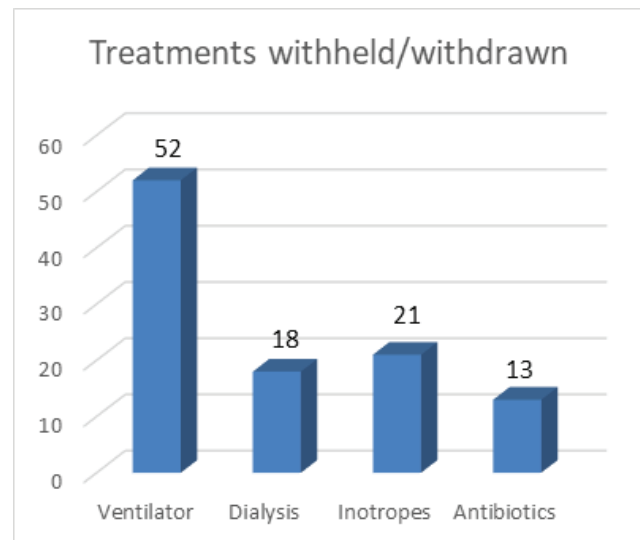


Figure 1. Frequency of Various Life Support Being Withheld/Withdrawn

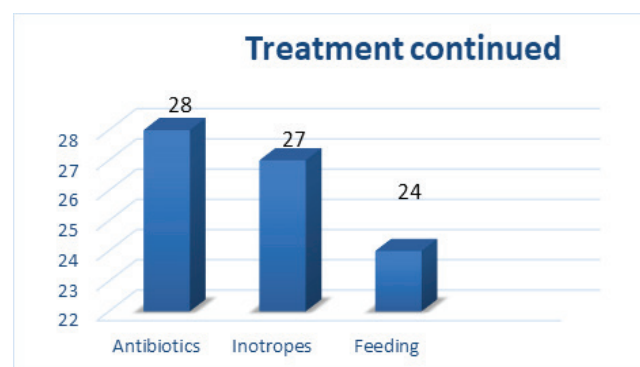


Figure 2. Treatments Continued Despite Poor Prognosis

Treatments were continued in the form of antibiotics, inotropes and feeding in regular intervals. The APACHE score and predicted mortality based on gender is illustrated in the Table 1 and Table 2 respectively.

Table 1. Distribution of Age, APACHE Score, Predicted Mortality and Length of ICU Stay in female patients.

	Age	APACHE	Predicted Mortality	Days of admission
Mean	60.17	32.78	70.78	6.13
Maximum	89	50	98.4	26
Minimum	30	10	6.9	1

Table 2. Distribution of Age, APACHE Score, Predicted Mortality and Length of ICU Stay in male patients

	Age	APACHE	Predicted Mortality	Days of admission
Mean	58.3	34.17	74.69	4.56
Maximum	88	50	98	12
Minimum	17	16	25	1

No correlation exists between APACHE score and duration of hospital stay or age.

DISCUSSION

In our study, it was found that the decision to withdraw life support was driven mainly by poor prognosis and financial constraints and the most commonly withdraw modality of treatment was mechanical ventilator. Antibiotics and inotropes supports were continued in majority of the cases along with feeding.

When an illness is considered curable or treatable, life support measures are successful in maintaining body processes until the person can continue recovering on their own. At other times, however, life support is considered futile treatment; that is, the patient has an incurable disease or will never recover fully functioning, and further treatment is considered useless. At that point, the decision is usually made to withhold life support or withdrawing it. The decision of WH/WD of life support is difficult due to many reasons; legal issues, lack of palliative care concept and cultural belief of fighting for life till the end.

Euthanasia is illegal in our country. Nepal Medical Council has revised its “Code of Ethics and professional conduct.” guidelines in 2017. In the section of Duties of Medical practitioner, care of the terminal ill patient, discontinuation of life support has been mentioned. “If a patient is terminally ill, medical practitioners need to consider whether treatments will offer any benefit to the patient at all or if, in the patient’s situation they will only cause harm. If a treatment will not work, if it will only prolong death, if it will increase suffering and make death more painful, the treatment is futile and should not be offered. This includes CPR and life support. To offer treatments that are not aimed at alleviating pain and discomfort in other words treatments that are not palliative in these situations would fall outside the medical standard of care.”⁷

“If it becomes clear when caring for a terminally ill patient that the treatment isn’t working and that any

treatment that is not palliative in nature is futile, e.g.terminally ill patient admitted in ICU with ventilator support, medical practitioners should discuss the situation empathically with the patient’s family as soon as possible regarding discontinuation of life supportive measures keeping in mind the best interest of the patient”.⁷

Factors associated with the decision of end of life support vary widely between regions, countries, individual ICUs and even between individual clinicians practicing in the same ICU.¹⁰ There are no withdrawal bundles as such and all depends on individual or on a team. To provide standards of practice for end of-life care; the WELPICUS study have developed draft statements for major end-of-life issues including the withdraw and withhold life support. There was consensus that, if a patient’s chances of surviving are extremely low or the patient would not want continued life-sustaining treatment, therapy may be withheld or withdrawn.¹¹These statements are consistent with the guidance provided by medical and regulatory bodies in several countries.¹²⁻¹⁶

The decision of withholding and withdrawing life support treatment is not uncommon. A survey done in the intensive care unit in Asia reported that for the patient with no real chance of recovering a meaningful life, 70.2% responding physicians almost always withheld and 20.7% physicians almost always withdrew life sustaining treatment.¹ In our study, an informed decision is made by the family members after thorough counselling regarding the patient status. In general, physicians in ICU in Asia report that they are less likely to limit life-sustaining treatments at the end of life than Western physicians. When analyzing the use of inotropes in patients of poor prognosis, in our hospital it is withheld in 39% and administered in 50%. Similarly, antibiotics is administered in 52.83% cases and withheld in 24% cases. However, the use of ventilator is withheld/withdrawn in 98.11% cases.

The study “The End of life practices in European intensive care units: the Ethicus study published in 2003 and Ethicus study II” published in 2018 (15 years apart) included 37 European ICU, have shown that withholding and withdrawing of treatment has been increased in all region.^{5,17} Many studies have reported the reasons for WH and/or WD of life-sustaining treatment in critically ill patients. Certain patient’s factors such as increased severity of acute or chronic

illness, advanced age has been associated with higher prevalence of withdraw and withhold life supports.^{4,17-21} Some studies has found specific illnesses such as malignancy,²¹ respiratory failure,²² neurological condition,^{23,10} patient with cardiac arrest,¹¹⁻¹² patients receiving hemodialysis,¹³⁻¹⁴ end stage liver disease,¹⁵ to be associated with life-sustaining treatment restriction. In our study the most common cause of withholding/ withdrawal of life support are respiratory failure(64.15%) followed by neurological (62.26%), renal (49.05%), circulatory(45.28%), hematological(24.52%) and hepatic failure(18.86%).

In some part of the world no financial role has been found on decision making of WH/WD of life support.¹⁶ Whereas in most other poor and developing countries like ours, due to high cost of critical care management financial constraint have high impact on decision.^{22,24} In poor socio-economic country like ours, with most of the population living under the poverty line, with no medical insurance policy in most of the cases, the decision to withdraw and withhold life support is largely influenced by financial constraints of medical treatments. In our study 43.39% (23/53) cases were withdrawn/withheld from life support partially or entirely due to financial constraints,16.98% made their decision due to financial issue and 26.41 % made the decision due to poor prognosis combined with financial issue.

Physician plays role for the prevalence of withdraw and withhold life support. "Code of Ethics and professional conduct" guidelines 2017 has clearly given the directive that if the treatment seems futile it shouldn't be offered.⁷ Physician should give proper guidance to the patient and patient party regarding decision of the end of life support. The important role of primary physician and critical care team had been seen in counseling and getting the consent from them.^{26, 27} In our setting too, patient's family is well informed about the patient's condition and prognosis so that they can make an informed decision.

The patient's pre-existing wishes, and advance directives were important reasons for the physicians' and family member decisions.^{27, 28} However, no such finding was drawn from our study.

CONCLUSION

The decision to withdraw life support was primarily driven by poor prognosis and financial constraints

and the most commonly withdrawn treatment was mechanical ventilator. Antibiotics and inotropes support was continued in majority of the cases along with feeding. The decision to withdraw/withhold the life support finally rests on the decision of patient's relatives. APACHE score as expected was a fine criterion to predict prognosis in the patients.

LIMITATION OF THE STUDY

The major limitation the retrospective and descriptive nature of the study and it was limited to a single center.

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